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**THE CHANGING PROFESSIONAL IMAGE OF LIBRARIANS:
FOCUSING ON THE JOB POSITIONS OF DIGITAL LIBRARIANS IN
ACADEMIC LIBRARIES IN THE UNITED STATES OF AMERICA**

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ABSTRACT

This content analysis study sought to gauge the technology-induced changing image of librarians in the context of digital environment of academic libraries in the USA via their job titles, responsibilities and qualifications as found in three online mailing lists (LISjobs.com, ALA JobLIST and Juju job search engine). The findings revealed that technological knowledge and skills/experience were the most frequently required/preferred of the 8 ALA's Core Competences of Librarianship. It equally revealed that master's degree in LIS or its equivalent was the overwhelmingly required qualification, that more than two-third of the ads required academic or digital library experience, and that the most frequently mentioned non-technology competences/experience included interpersonal and communication, knowledge organization, digital collection management and project management skills as well as the ability to work independently and collaboratively. Implications for prospective digital librarians as well as for library educators/schools were discussed.

Keywords: Academic libraries, Content analysis, Digital librarian, Digital libraries, Professional image of librarians, Sociology of Librarianship profession

TITLE PAGE

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BEING

**A MASTER THESIS PRESENTED IN FULFILMENT OF THE REQUIREMENT
FOR THE INTERNATIONAL MASTER IN DIGITAL LIBRARY LEARNING
PROGRAM**

BY

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DEDICATION

This research work is dedicated to my LORD Jesus Christ, who has been the strength of my life and by whose favors I successfully passed through the DILL Master's program.

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Isaac Kenechukwu Ohaji

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CHAPTER 1: INTRODUCTION

The increasing creation and availability of electronic resources and the application of technology to library processes, especially in this Information Age, have led to the emergence of digital libraries and digital librarians. Thus a technological context is brought to bear on the work of librarians. The librarians are now meant to have redefined responsibilities that require new skill set (both basic and preferred) on top of the core skills of librarianship. This implies bringing on board new benchmark standards into the librarians' job responsibilities and requirements, which in turn cast a new light on their image or status, especially those working in the digital library environment or with electronic resources. It must be noted, however, that achieving this new professional status is all about having the requirements and being able to perform to the new benchmark standards. As such the "new librarians" with the "new status" are worth investigating for better appreciation of the dynamics of the new scenario playing out in librarianship.

1.1 Digital Libraries and Digital Librarians

1.1.1 Perspectives on Digital Libraries

Having proper perspectives on digital libraries is a great incentive and cue to understanding this study as it provides useful background and insight into their emergence, what they are, their place and roles.

The Definition and Role of Digital Libraries

It appears from available evidence that the term "digital library" is in the eyes of the beholder. There are many things to which the term can be applied and this accounts for the very many definitions that exist. According to Gupta, Singh and Negi (2005) the term may be used to describe

- Collection of electronic journals and books
- Online educational portal
- Repository of multimedia files
- Archives of information created from local knowledge
- Electronic version of libraries
- The entire internet

Likewise, William (as cited in Sreenivasulu, 2000) presented what may be considered to be a digital library as follows:

- (1) Machine-readable data files;
- (2) Components of the emerging National Information Infrastructure (US);
- (3) Various online databases and CD-ROM information products;
- (4) Computer information storage devices on which information resides; and
- (5) Computerized networked library systems

However, it is assuaging to note that Borgman (1999) sought to bring clarifications and meaning to bear on these definitions. She uncovered that each definition belongs to either of the two broad schools of thought; the Computer and Information Science research community and the Practising Librarian community. She differentiated between the research-oriented definitions that view digital libraries as content collected on behalf of user communities and the library-oriented definitions that see them as institutions or organizations that provide information services in digital formats. Borgman (1999) concluded that definitions are formulated to serve specific purposes and, given the inherent conflict of interests, people using the term need to define what they mean. For instance Neuhold and Niederee (n. d.), while agreeing to the existence of various definitions, however, summarized them from content-to-community context as “A digital library is an information system targeted towards a specific community where content from different sources is collected and managed, content is structured and enriched with metadata, and a set of services is offered that makes the content available to a user community via a communication network, typically the internet”. Moreover, for the purpose of this study the working definition of Digital Library Federation (DLF) is deemed relevant and will subsist:

“Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities” (Waters as cited in Borgman, 1999, p.236).

It is pertinent to note that the DLF is a federation of academic institutions, mostly universities and some libraries, and would naturally cater for the interest of their constituency. An analysis of their definition reveals the emphasized functional attributes of collection, organization, preservation, access and economy as well as the context of service (i.e. the user community).

Digital libraries are meant to play some vital roles and as such must have some basic components. Gupta, Singh and Negi (2005) listed them as follows:

- (1) Servers for database storage
- (2) Adequate number of PCs connected in a LAN
- (3) Local databases in machine readable form, CD-ROMs
- (4) RDBMS (Relational Data Base Management System) that supports variety of digital formats
- (5) Search engines to index and provide access to resources
- (6) Electronic document management functions that will aid in overall management of digital resources
- (7) Well trained manpower

These characteristics were summarized by Sreenivasulu (2000, p.13) as including "...the storage of information in digital form, direct usage of communication networks for accessing, obtaining information, and copying by either downloading or online/offline printing from a master file". With regard to these characteristics, digital libraries play a number of roles. Neuhold and Niederee (n. d.) highlighted their content-to-community roles as entailing content pre-selection, content structuring, content enrichment and library services. Tjiek (2006) discussed their role in the context of the preservation and dissemination of indigenous knowledge. Their roles in education were articulated by Masullo and Mack (1996). They include:

1. As a resource for teaching (curriculum development);
2. As an environment for learning (student experience); and
3. As authoring space (again, in support of student experience).

In regard of their roles, the digital library technology requirements are as Masullo and Mack (1996) itemized:

- Hosting multimedia information
- Making it accessible via search and browsing
- Supporting certain kinds of collaboration, e.g. feedback about digital resources, in support of re-use, and
- Using the web as an end-user interface for these capabilities

In the present Information Age or Dispensation digital libraries are great appurtenance of education especially at the higher institutions. As such they play a great supportive role to teaching and learning that their present impacts merit some investigations. A better appreciation of the priority for digital libraries begins from being acquainted with its history.

The History of Digital Libraries

The period 1994-2004 reflects the burgeoning era of digital libraries. As Lynch (2005) reported, this period represents the first time that digital library research could really get substantial programmatic funding from major research funding agencies in the United States of America (US). Thus, funding legitimized digital libraries as a field of research. However, the history of digital libraries dates back to an earlier period.

Although the oldest digital library seemed to be Project Gutenberg founded in 1971 by Michael S. Hart, the first use of the term "digital library" was in a 1988 report to the Corporation for National Research Initiative, while its plural form (digital libraries) was first popularized by the NSF/DARP/NASA Digital Libraries Initiative in 1994 (Wikipedia). Witten and Bainbridge (2003) and Lynch (2005) saw the pre-history of digital libraries in the works and ideas of such thinkers or techno-dreamers as H.G. Wells, Paul Otlet, Vannevar Bush and J. C. R. Licklider from the turn of the 20th century up to the 1960s. Wells promoted the

concept of “world brain”, Bush thought during WW II of a sort of future mechanized private file and library (Memex) while Licklider envisioned a “network of ‘thinking centers’ that will incorporate the functions of the present-day libraries together with an anticipated advances in information storage and retrieval” (Witten and Bainbridge, 2003, p.16). All of these paved the way for the technical and engineering basis for digital libraries discernible from the 1960s. Lynch (2005) outlined this basis to include online research and commercial information services, library automation systems, document structuring and manipulation systems, human computer interface work, among other efforts.

There is a host of factors that facilitated the emergence and development of digital libraries. First is the availability of the internet, Web technologies, electronic resources and Information and Communications Technology (ICT), all of which are built on top of computer capabilities. Second was the impact of programmatic funding and community creation (Lynch, 2005). The availability of research funding for digital libraries attracted interest from varied disciplines and professions that grew rapidly throughout the 1990s and also played significant roles in community building (Borgman, 1999). Lynch (2005) noted in particular the promising areas of research at the crossroad of technology and Social Sciences that were of interest to the digital library community and needed to be invested upon. They included:

- Personal information management;
- Long term relationship between humans and information collections and systems;
- Role of digital libraries, digital collections and other information services in supporting teaching, learning and human development; and
- Active environment for computer supported collaborative work which offered the starting point for another research program.

The third contributory factor was the fact that digital libraries became a key component of the National Information Infrastructure in the USA. As a result digital library initiatives were launched; the Digital Library Initiative, Phase I (1994-1998) involving three US federal agencies and the Digital Library Initiative, Phase II (1998-2004) involving eight US federal agencies (Borgman, 1999, p.228). The fourth factor was the scenario playing out in the universities. Lombardi (2000) informed of an aversion in most US universities to physical library space in the wake of Digital Age; this began in the mid-1980s and grew into a full-blown phobia by the end of the 1990s. This was a great incentive for digital libraries to take off and flourish. In addition to this development was the fact that universities played leading roles in the development of digital libraries. Borgman (1999) revealed that early digital library conferences were organized by individual universities and agencies, before such professional societies as Association for Computing Machinery (ACM) and Institute of Electrical and Electronic Engineers (IEEE) later began supporting them.

Finally, Greenstein and Thorin (2002) highlighted some characteristics of the startup digital libraries which invariably boosted the development of digital libraries. These included

innovation, quest for “killer apps” and competition. Worthy of mention in relation to the startup digital libraries are the common influences which surrounded the launching of a digital library; guiding mission, institution-wide mandate, the support of library and university leaders, a protected experimental environment and sufficient funding (Greenstein and Thorin, 2002, p.4).

Neuhold and Niederee (n. d.) observed that the first generation digital libraries were built on experimental fashion and helped to establish the core functionalities of digital libraries that led to the development of digital library management systems like DSpace or Greenstone for managing a digital library. The authors articulated three trends that followed as including:

- i. Adoption in digital library technology of a more decentralized, service-oriented approach for digital library architectures aimed to systematically make digital library functionality available to a broader audience, reduce the cost of entry for this technology, to improve flexibility and adaptability and to foster shared and synergetic use of content, metadata, services and other resources;
- ii. The offering of additional services beyond search and collection management that reflects a broadened understanding of the role of a digital library within a community; and
- iii. The use of semantic web technology for intelligent search services. This is the user context that includes semantic annotation of content objects based on domain ontologies, the use of concepts and ontological knowledge instead of strings in search, and concept-based clustering of query results.

Today, the impacts of digital libraries on research and teaching and learning affect both the personnel and the processes in the libraries of academic institutions, and have led to the emergence of digital librarian positions. Thus they have brought about new ways of doing things which have foisted on librarians the need to acquire additional technical and technological skills.

1.1.2 The Digital Librarians

The “digital librarians” are the natural effects or products of the emergence of digital libraries. Sreenivasulu (2000, p.13), sharing this view, wrote “The emerging global digital libraries or world-wide digital information centers generate the need for creating a new job-title ‘digital librarian’ to manage their digital knowledge resources”.

The Definition and History of Digital Librarians

Barton (2005, p.86) noted that the term “digital librarian” was coined to refer to staff with more technical skill set and a correspondingly technical remit within the hybrid library service. These technical skills were requirements consequent upon the emergence of digital libraries. Therefore, in a literal sense the digital librarians are those who create and manage digital collections and services. However, there are many perspectives to understanding the digital librarian. Barton (2005) furnished the library school and team-based perspectives. Library schools offer broad-based training across both traditional and digital skill set so that those entering the profession could be said to be digital librarians to some degree. Also there are new specialist courses in digital librarianship aimed at equipping librarians with the technical skill set necessary for manning the digital libraries. Those with such technical skills are digital librarians. The team-based perspective, typical of the UK environment where information specialists (including librarians) work alongside technical innovators to develop high quality digital components within the overall service framework, showcases digital librarians as such nurtured librarians with cutting edge skills and project management experience. Furthermore, Sreenivasulu (2000) offered a domain perspective on the scope of the digital librarian. Thus the digital librarian can be manager of a digital library, digital information center or a librarian of the electronic library, which may be a division/section of a traditional library. Considering their role in digital library developments within the library domain and in the wider context of education and scholarship in the digital age, Barton (2005) perceived digital librarians as “boundary riders on the storm”.

Available literature shows that digital librarian positions are a recent phenomenon. Marion (2001) examined 250 online academic librarian job ads in 2000 but found no identifiable “digital librarian” category. However, Choi and Rasmussen (2009) gave a possible reason for this as being that the term ‘digital’ in a position title or responsibilities was not considered as a criterion for job ad collection in that study. But a careful look at the study carried out by Croneis and Henderson (2002) on the job announcements for “electronic” and “digital” librarian positions shows that job announcements on the digital librarian positions began to appear as from 1996 and grew in the period 1998 to 2000 from three to sixteen. Starr (2004) discovered “digital information services librarian” position among the job titles that were new in 2003. Since this time there appear to have been increasing job announcements on varying forms of the digital librarian positions. An understanding of their responsibilities will suffice.

The Responsibilities and Requirements for Digital Librarians

The generic responsibility of the digital librarian is to create and maintain digital collections and services. However, Sreenivasulu (2000, p.13) marshaled the specific responsibilities of the digital librarian to be to:

- Manage the digital libraries;

- Organize digital knowledge and information;
- Disseminate digital information from the computer-held information;
- Provide digital reference services and electronic information services;
- Provide knowledge mining from the emerging knowledge warehouses;
- Handle the tasks of massive digitization, digital storage process, and digital preservation;
- Provide universal access and retrieval of digital knowledge, ultimately access to all; and
- Catalogue and classify digital documents and digital knowledge.

To effectively and efficiently carry out the above functions, digital librarians are required to possess or develop some core technical skills as presented in many studies. It must be noted that no particular library will need all skills neither is any individual expected to possess all of them; each library articulates what it needs to accomplish its objectives. Tennant (1999) published a list of skills considered necessary for librarians that will create and manage digital collections and services to include:

- Imaging technologies
- Optical character recognition (OCR)
- Markup languages (HTML, SGML, XML)
- Cataloging and metadata
- Indexing and db technology
- User interface design
- Programming
- Web technology
- Project management

Rather than library managers hiring those with just the needed skills, Tennant (1998) proffered going for those who can evolve as needs of the organization change. This is against the backdrop that some skills become obsolete in time. In this light some personality traits are of greater importance than the technical skills. These include:

- The capacity to learn constantly and quickly
- Flexibility
- An innate skepticism
- A propensity to take risks
- An abiding public service perspective

- An appreciation of what others bring to the effort and an ability to work with them (i. e. interpersonal skills)
- Skill at enabling and fostering change
- The capacity and desire to work independently

The implication of Tennant's perspective is that in addition to the needed skills employers would have to include the personality traits in their job ads.

In a review of job announcements in *College & Research Libraries News* from the 2006 and 2007 issues Thompson (2009) discovered as the core technology competences for "digital collections librarian" position the following:

- Institutional repositories and digital collections
- Digital asset management system
- Web technologies: page design, portals
- Social networking technologies: podcasting, RSS, virtual worlds
- Project management
- Grant writing
- Developing partnerships and working in teams

No doubt as there continue to be advancements in digital library technologies and capabilities more sophisticated technical skills will be required for digital librarians. For instance the study of Choi and Ramussen (2009, p.462) discovered that the technological competency requirements and experience appearing in their sampled job ads included:

- Current trends, standards, technology in digital library; digital library environment; digital repositories in academic setting
- Digital library software/digital asset management tools (exCONTENTdm, DSpace, Fedora, Proquest Digital Commons); software/hardware applications used in organizing and presenting digital information
- Digital library (initiatives/projects/strategies); digital information systems or services
- HTML (coding practices), authoring tools/page editors
- Competency on general technical; computer hardware and software applications; computer skills/computer literacy; PC and software packages
- Information technologies and tools related to academic/online learning environment; technologies to support services and productivity; emerging technologies – implementation and management of; applying technologies to library services; information technology application development, design and deployment
- Current state of IT and its role in Information Science; role of technology in research and academic libraries – understanding and commitment to
- Mark-up languages/systems (XML, SGML, TEI, EAD, etc); productivity tools for XML mark-up
- Programming/scripting languages (C, C++, Java, Perl); web programming
- Database structure, creation and maintenance (design and administration), related technologies

- Web design; web development; interface; web-based services and collections
- Networking; ERL server; web server
- Network, telecommunication, management (TCP/IP, wireless)
- Computer platforms [operating systems] (UNIX, Linux, Windows, MacOS)
- Systems administration and management; systems development, analysis, architecture
- Multimedia/web delivery of multimedia formats; image delivery technologies
- Implementing search engines
- Graphic design skills
- GIS software
- Information architecture
- Library integrated systems (ILS)

Choi and Ramussen (2009) also indicated that most of the ads required an advanced degree, typically MLS degree, as educational qualification for the digital librarian position.

All these studies are indicators of the expectations on the qualifications and requirements for academic librarians in the wake of technological impacts on the academic library environment.

1.2 Research Theme

This work is situated in the sociology of the profession of Librarianship. However, the context is in tandem with one of the four (4) sub-themes of the 5th Interim Meeting of the European Sociological Association; “The power-knowledge nexus in professionalism” (Bureau, 2008). It follows that the qualifications and competences or skills embodied in a profession give its practitioners the power of worth, recognition, competitiveness and performance, on the basis of which employers deem them qualified, relevant and appoint-able. These, in turn, impact positively on the perception of the librarians by the employers as well as and in the view of the beneficiaries of their services. Thus the dynamics and transformations in the library profession impacted by information technology no doubt positively affect the image or status of librarians, and can be gauged by the qualifications, responsibilities and competences expected of digital environment librarians.

1.3 Background and Significance of the Problem

Interest and curiosity are at the base of this study. The impetus was provided by the involvement of this researcher in the International Master of Digital Library Learning (IMDILL) program and his concern for the marketability of the products of this program in the wake of technology-driven sociological changes impacting on the library profession. A good knowledge of the job market and institutional requirements is deemed necessary for appreciating the “new” image or status of librarians needed to work in the digital library environment. It is argued here in this regard that job advertisements (ads) represent the employers’ expectations and image of the prospective employees. This follows from the assumption that the value of trained and qualified professionals is well understood by the

employers advertising for job positions. Any investigation in this regard could reveal any gap between reality and need, firstly for the job seekers requiring relevant skill set and secondly for library educators that must pick the cue to redress any imbalance in their curriculum.

1.4 Statement of the Problem

In academic libraries digital libraries are of different organizational forms and serve certain purposes that might be reflected in the job titles and responsibilities of the librarians that work in them. Though there is lack of agreement on the role of the digital librarian due to the different definitions and models of the digital library (Tammam, 2007), yet digital libraries perform essentially similar functions that one wonders why there is the difficulty in agreeing on their roles or duties. It becomes necessary then via content analysis to investigate what digital librarians do and what educational and professional background they must possess in this regard. This finds justification in an earlier study by Croneis and Henderson (2002, p.236). They had recommended that "...future content analysis might provide useful information about knowledge, skills and abilities required for electronic and digital positions".

The choice of content analysis as the method of investigation follows the fact that it is an established method for observing trends in the library profession (Starr, 2004; Choi and Ramussen, 2009). Furthermore, it supposes that job ads will indicate the ideal job as defined by the employer at a particular point in time and the library will include in the ads those knowledge, skills and abilities it believes to be important at the time (Smith and Lynch, 1999, p.2).

This study is an attempt to articulate the new image of the librarians in the context of the digital environment of academic libraries via the job titles, responsibilities and qualifications of the digital librarians from chosen online job mailing lists.

1.5 Theoretical Framework

Like similar works on online job advertisements for librarians, for instance done by Marion (2001); Kennan, Cole, Willard, Wilson and Marion (2006); Gerolimos and Konsta (2008); Orme (2008); and Kennan, Cecez-Kemanovic, Willard and Wilson (2009), this study will use the content analysis approach which invariably favors the interpretive research framework. Cryer (http://www.postgrad_resources.btinternet.co.uk/student-resources11qual-quant.htm) pointed out the strength and power of the interpretive research paradigm that make it suitable for this investigation. It is appropriate for researches involving small samples and requiring in-depth investigation and primarily descriptive data which may be quantitative as in coded questionnaires or documentary analysis (i.e. quantifiable qualitative data). Besides, interpretive approach emphasizes exploration and insight rather than experiment or mathematical treatment of data, can address how and why something is happening or what is happening in a wider context and arrives at "truth" by the power of argument instead of mathematical reasoning.

1.6 Research Questions

This research was guided by the following questions:

1. What job positions for digital librarians are included in the job ads?
2. What are the responsibilities expected of the digital librarians?
3. What qualifications are included for the digital librarians in the job ads?

CHAPTER 2: REVIEW OF LITERATURE

The relevant underlying literature reviewed for this study are discussed in this section under two broad perspectives; paradigm shifts in academic libraries and content analysis of job advertisements for academic librarians.

2.1 Paradigm Shifts in Academic Libraries

King (2000) chronicled a host of trends significantly impacting universities in Australia, and indeed elsewhere in the Western world. They include:

- (1) Contracting government funding
- (2) Increasing globalization of higher education
- (3) Competition from both traditional institutions and commercial entities entering higher education arena
- (4) Advances in technology enabling the emergence of virtual institutions and online teaching
- (5) Changing student market and needs
- (6) Lifelong, mature age learners and part-time participation

Interest in these trends stems from the fact that King's study relied, in part, on online information about some North American universities (through site-visit of university libraries in the US).

Likewise, Hazen (2000) noted these shifts or trends to be in the three broad areas of information, research and higher education which have profound effects on universities, the scholarly community as well as libraries that are bound up with, but not limited by, advances in information technology. Hazen (2000) further described the challenging effects of these shifts as including:

- a. The changing nature and quantity of scholarly resources necessitate cooperation among libraries as well as forging alliance with other cultural institutions and repositories.
- b. Initiatives to anticipate and address users' needs must encompass the production and ownership of information resources, how these resources are organized and described, and the means through which they are used.
- c. Adjustment of academic libraries to trends in higher education that is becoming more vocational, cost-conscious and pragmatic even as research is becoming more peculiar and as scholars demand ever more and more varied information.

As a result of the changes impacting academic libraries in relation to the academic library professional staff, Gulati and Raina (2000) observed three paradigm shifts being experienced by library and information professionals (LIPs) at the dawn of this 21st century. They include:

- The transition from paper to electronic media as the dominant form of information dissemination, storage and retrieval
- Increasing demand for accountability, with focus on quality customer services, performance measurement, bench marking and continuous improvement
- New forms of work organization such as end-user computing, work-teams, downsizing, re-engineering, outsourcing, etc

All these imply new roles for LIPs as analyzers, synthesizers and interpreters of knowledge and information, rather than being content with acquiring, organizing and providing information when asked for (Gulati and Raina, 2000).

It must be noted that King (2000), Hazen (2000) and Gulati and Raina (2000) reflected technology among the trends and shifts impacting academic libraries. Technology no doubt is a very important factor that requires closer examination.

2.1.1 Technologies in Academic Libraries

Malinconico (1997, p.48) observed that, long before the advent of commercial computers in c.1951, technology (typewriter [1872], linotype machine [1891], photocopy machines [1912], microfilm [WWII], microphotography camera and reading machines [1937]) had been deployed to some library processes, and indeed brought transformations to bear on both library works and the staff behind them. Thompson (2009) chronicled the history of library technology and technology competences from 1950s to date by the decades and concluded that the current state of technology would determine to a large extent the type of technology competences that library staff would need. Thompson's main trends within each decade (Thompson, 2009, p.9-17) are summarized below.

The 1950s

The experimental use of computers first focused on their crunching ability. But after World War II focus shifted to their abilities to store, organize and retrieve information effectively as appropriate for libraries. However, search capabilities were not realized at this stage and library automation had no direct impact on the lives or competences of most librarians and staff.

The 1960s

What was witnessed at this time included the beginning of more sustainable library automation efforts; the establishment of major government databases like Agricola, ERIC (Education Resources Information Center) and Medline; the establishment of OCLC (Ohio College Library Center); the creation of the MARC (Machine Readable Cataloging) record format for the Library of Congress and the development of technology-specific arms by library profession's major associations such as IFLA (International Federation of Library Associations and Institutions) and ALA (American Library Association). The computers used

in these early efforts were offline, batch-processing systems, typically using punch cards for data entry.

Specific library operations included discrete automation elements and the library staff fortunate enough to use technology was restricted to a limited user role and needed only the competence of transferring typewriting skills to keyboarding, operating punch card machines and following step-by-step procedures to use the computerized device.

The 1970s

The dominant technology in the first major part of this decade was the mainframe computers requiring special air-conditioned clean rooms serviced by white-coated techies; minicomputers became the dominant force by the end of the decade. The period witnessed significant strides in the automation of the major library functions: acquisitions, cataloging, circulation and bibliographic database searching, as well as the conversion of bibliographic data into electronic form.

Typical library staff competences still remained the ability to follow step-by-step procedures to use the computerized device and the ability to navigate choices on a terminal screen. Additional skills for catalogers might include knowledge of the MARC format and the ability to input records into the OCLC using terminal and modern technologies, while reference librarians would require new skills for searching bibliographic databases using specialized commands, modem protocols and Boolean logic.

The 1980s

The 1980s were a pivotal decade: witnessed a major change in the second-generation Integrated Library Systems (ILS) designed as turnkey systems; the library, for the first time, was given the possibility to take control of its technology and use locally trained experts; further changes brought about by the introduction of desktop computers as librarian and staff began to experience computers at a personal level; truly effective automated public access catalogs for library users became widely available; and the replacement of paper periodical indexes by compact discs (CD) databases on PCs (and Macs) by the end of the decade. Users could now search the library collection much more efficiently but must first be trained. This responsibility of training users fell on reference librarians and by this time bibliographic instruction was to be replaced by information literacy.

Librarian and staff competences during this period centered on becoming expert in the function-specific technology and dedicated hardware in the individual's particular department. While library was responsible for maintaining computer technology, in-depth technical know-how was limited to select experts, namely the systems librarians. Thus, library staff in other areas of library operations were not expected to directly control or support technology in their areas beyond their basic user level.

The 1990s

This decade witnessed the consolidation of the gains of the 1980s as well as the advent of the revolutionary internet and World Wide Web. Two main developments in library automation were networking at multiple levels and the introduction of client-server systems. LANs became a key player in the expansion of technology experienced by libraries in the 1990s. Windows operating system was introduced in the mid-1990s and, with it, the third generation of ILSs enabled access to automated functions from library staff's desktop computers. The advent of Mosaic, the first graphical browser, in 1993 made it much easier to search for content using the hypertext protocol.

During this period library staff continued to develop their competence in the components of the ILS pertaining to their specific work area and learning how to operate the automation system in the Windows environment. All librarians and other staff were expected to learn to use PC technology as well as the basics of the Windows operating system, word processing and other office applications and e-mail communication. However, some developments led to the appearance of function-specific applications such as interlibrary loan systems and cataloging authority systems. The need for online presence providing a user interface to the library's electronic resources and some services led a few to develop skills in creating web pages. Also as bibliographic databases expanded and moved online, new skills were required by reference librarians and acquisitions staff. Library systems staff came under increasing pressure not only to support all types of new technology but also to spot trends and specify acquisition of new technology.

The 2000s

The current decade is that of breathtaking and complex developments and advancements in technology. First is the integration of technologies and independent systems, along with improved authentication and authorization services that now create friendlier and easier-to-use information environment. Second, library technology is beginning to break away from vendor-defined systems, made possible by open-source technology. Third, the emergence of standards beyond MARC, which enhance open-source initiatives and technology linkages; these include RDF (Resource Description Framework), XML (Extensible Markup Language), Dublin Core Metadata and OpenURL. In addition the distributed environment has become wireless, print materials are becoming digitized and libraries are both purchasing and creating born-digital information materials. Finally, there is the concern for web-driven information overload and the librarians' response by way of teaching skills on how to search effectively and evaluate sources in the open search environment.

All of these trends in this era have implications for libraries and librarians. Librarians now realize that their systems departments are no longer able to handle all the demands for supporting the many different types of technology available in the library so that library staff are increasingly being required to provide some level of technology support for

themselves. The implication is that they have to acquire or develop “hard” technical skills. Also due to the increased capabilities of new systems and the need to customize complex systems to user-friendly ends, technology-related “soft” skills are equally required. These include usability, accessibility, marketing, desktop publishing, graphic design, security and online instructional pedagogy.

No doubt the most sublime impacts on academic libraries come from the adoption and application of technology to library processes. This was elaborately captured by Todaro (2008) as follows:

In fact, all aspects of academic libraries are affected by the technology of today and tomorrow including all library programs and services; service delivery; service constituent/patron interactions and use; policy design and implementation; facility design; librarians and library staff; available print, media, virtual and digital information and research content; teaching, learning and pedagogy; consortial and partnership relationships; technology in the higher education environment and the bigger-than-local, regional, state, federal and global trends and issues affecting the student, faculty, staff and general community constituent.

Interestingly, Thompson (2009, p.17) gave a positive connotation to the technological impacts on libraries; “In some ways, technology is beginning to return to us the original purpose of libraries to find knowledge rather than to learn how specific technologies work”. Thus changes must not be allowed to eclipse, alter or interrupt the mission of libraries as libraries have always fulfilled their mission against the background of change (Friend, n. d.).

However, various challenges and implications of technological changes for academic libraries could be articulated in terms of the mission (Friend, n. d.), physical space (King, 2000 and Harloe and Williams, 2009) strategy (Lewis, 2007) and new roles for academic libraries (Fourie, 2004 and Kumar, 2009). Friend (n. d.) particularly looked at the mission and purpose of academic libraries in the face of increasing pace of change. While arguing that the mission of the library remains the same even in the face of changes, he iterated that, rather than being redefined, the mission of the library must be reinterpreted and new ways found to fulfilling it. To this end change must be harnessed rather than being allowed to drive the libraries. Friend (n. d.) rather concerned himself with the barriers that could hinder the mission, which he saw as being financial and legal rather than technical. Among such barriers include cost of providing network connections, cost of providing information and the fluidity of electronic information in relation to content preservation. He proffered political support and private generosity or support as proven ways of overcoming the above noted barriers.

Space, in the context the applying technology to library procedures, is an important issue of consideration. While itemizing significant challenges to universities, King (2000) focused on

the “physical place” and highlighted future models of American academic library buildings as evolving into four architectural stages (Kaser cited in King, 2000). These include:

1. Information Commons – designed to organize workspace and delivery around an integrated digital environment.
2. The Integrated Facility – integrating the technologies and library functions into a collaborative environment.
3. The Learning Centre – linking academic studies with other educational purposeful activities in a seamless intellectual and social space.
4. The Decentralized Model – a technologically enabled model focusing on distributed access to services.

Kaiser (cited in King, 2000) speculated that because these buildings “have not yet realised the impact of new electronic technologies”, a 5th type might emerge. However, Harloe and Williams (2009) observed that, with the rise of the internet and the corresponding explosion of digital resources available for both research and instruction since the mid-90s, the traditional model of the library as a “place” for quiet study and contemplation has been replaced by the notion of the library as a space where many kinds of active learning and scholarship can occur. Thus a paradigm shift from provision of instruction to the producing of learning now occasions a switch from bibliographic instructions in computer labs/classrooms to the concept of learning commons. Harloe and Williams (2009) furnished three main implications of this paradigm shifts as follows:

- More library space to be devoted to dealing with critical literacies (information literacy, visual literacy, reading and writing in both print and digital forms) and less space to be devoted to the storage of print collections;
- Building of high level research collections that in turn support various forms of undergraduate research and scholarship; and
- Exploring different ways in which teaching and learning can take place within the physical spaces of the library. Some factors to be considered in this exploration process include: (a) The fact that changes in physical space and collection are not one-time events; (b) Alterations in physical space need be flexible to accommodate changes in user needs, collections and technologies; (c) Current and future collaborations; and (d) Involvement of faculty, IT units and Centers to Teaching and learning in useful reallocation of library space.

Looking at how academic libraries could deal with the technology challenges, Lewis (2007, p.4) contrived a strategy model, whose five parts include:

1. Complete migration from print to electronic collections and capture the efficiencies made possible by this change;
2. Retire legacy print collections in a way that efficiently provides for their long-term preservation and makes access to this material available when required;
3. Redevelop the library as the primary informal learning space on the campus;
4. Reposition library and information tools, resources and expertise so that they are embedded into the teaching and research enterprises; and
5. Migrate the focus of collections from purchasing materials to curating context.

Lewis' (2007) four assumptions underlying his strategy were as follows:

- i. Libraries are a means and not an end.
- ii. Libraries confront a variety of disruptive technologies and these technologies will disrupt libraries.
- iii. Real change requires real change.
- iv. We have a window of opportunity.

This model is not without some implications. Putting the parts together, Lewis (2007) noted the implications to include library space redevelopment, requirement of financial resources, repositioning of resources, and new investment in staff resources. Thus a new way of managing the libraries is necessitated and would reflect new ratios in library staff composition and flexible staffing (those with skill set to try and succeed at new things will be critical).

The impacts of technologies on academic libraries, besides requiring model strategies, also imply new roles for making the strategies effective in realizing the mission. Kumar (2009) articulated the new roles of academic libraries in the present technology paradigm to be as:

- Gateways to information
- Learning center
- Training center
- Publication center

Some new services to be focused upon in this regard would include Library 2.0, library digitization, digital library, instant messaging reference service, information commons, wiki, blog and information literacy (Kumar, 2009). However, against the background of this information and technology-driven society, and as can be gleaned from review of literature, Fourie (2004) articulated for academic libraries the envisioned new roles and skill set below:

- Cultural role
- Teaching role
- Provision of access to information
- Space provision
- Negotiation/lobbying on behalf of users
- Publishing role
- Advising role
- Project management
- Information organization
- Archival management
- Information retrieval and researching
- Environmental scanning
- Active identification of new niche markets
- Action research

But it must be noted that while a few of these roles are entirely new others are only contextually new. These new roles, services and skill set discussed in this section index the changing nature of the works of academic librarians.

2.1.2 The Changing Nature of Works in Academic Libraries

Implying changes in the nature of work in academic libraries, Kumar (2009) showed that the present electronic environment requires academic librarians to work independently or as a team to deliver service-oriented and user-centered applications, instructions, programs, projects and services. He went further to explain that in addition to their general qualification and requirements, academic librarians must possess such capabilities, experience, knowledge and skills as (Kumar, 2009, p.107):

1. Expertise in the use of innovative emerging technologies to design and develop web-based applications, programmes and services.
2. Assist users to locate, access, store and transform electronic information resources, services and instructions across multiple applications, databases, networks, platforms and systems through an academic library's information commons.
3. Having knowledge of designing, developing, launching and maintaining of digital content management and assess, evaluate, recommend and test various methodologies, policies, and standards for utilizing computer software in the process of creating and preserving digital collections and resources.
4. Assess, understand, think and adopt changes fit to the requirements rather than become blind follower of versatile technological developments.

The changing nature of library work is now a subject of continuing interest to practitioners, educators and researchers (Lynch and Smith, 2001). In this regard, Lynch and Smith (2001) and Starr (2004) conducted their studies based on content analysis of job advertisements. However, while Lynch and Smith (2001) covered a 25-year period (between 1973 and 1998) and focused on academic library job advertisements appearing in *College & Research Libraries*, Starr (2004) covered a 20-year period (between 1983 and 2003) and focused on job position announcements for all kinds of libraries, including academic libraries, appearing in the *American Libraries* and *Library Journal*. Lynch and Smith (2001) analyzed a total of 220 job advertisements in *College & Research Libraries News* for the month of March in the years 1973, 1983, 1988, 1993 and 1998. They discovered that all academic library jobs routinely included computer technologies, that instruction had become an integral part of reference work, that behavioral skills, especially oral and written communication skills, had emerged as new job requirements and that the master's degree from a program accredited by the ALA continued to be widely accepted as the appropriate professional degree for academic libraries. On the other hand Starr (2004) drew her research samples from the January, April, July and October issues of the chosen journals for 1983 and 2003. The author analyzed her data by way of comparing the two years in an attempt to measure change. The variables measured included total number of job openings, job titles, geographic distribution of job openings, salary, degree requirements, experience requirements, computer skills requirements, supervisory expectations and foreign language skill requirements. The author discovered significant changes which support a prediction of continuous change even as librarianship's core contributions remain the same.

These studies prove the reality of changing nature of work in academic libraries. There is need then for such, especially content analysis, studies from time to time in order to track changes. It is also pertinent to note that the studies of Lynch and Smith (2001) and Starr (2004) were limited to job ads on print medium, so that with the increased online job postings future studies should focus on the online environment.

2.2 Content Analysis of Job Advertisements for Professional Librarians

Studies employing the methodology of content analysis of job advertisements in all libraries including the academic libraries could be analyzed in terms of both scope or focus and the medium of advertisement. Starr (2004) reviewed a number of studies in which she identified four kinds of scope. The first type includes studies of one or two job positions within one library type, typically the academic library; serials positions (Mueller and Mering, and Kwasik cited in Starr, 2004), systems positions (Foote cited in Starr, 2004), collection development and management jobs (Robinson cited in Starr, 2004), subject specialists (Detlefsen, and White cited in Starr, 2004), reference positions (Xu, and White cited in Starr, 2004) and electronic and digital librarians (Croneis and Henderson, 2002). To this group shall be added

the recent work of Shank (2006) on instructional design librarians and that of Choi and Rasmussen (2009) on digital librarian positions.

The second category consists of studies of one or two positions in all types of library, such as serials librarian (Copeland cited in Starr, 2004), cataloging positions (Furuta; Towsey; and Chaudry and Komathi cited in Starr, 2004) and automation librarians (Budd cited in Starr, 2004).

The third type embodies the works of some researchers that looked at all job positions in a single library type, mostly the academic library (Jackson and Clouse; Reser and Schuneman; Zhou; Beile and Adams; and Lynch and Smith cited in Starr, 2004).

The last group showcases investigations into all job positions in all library types (Dolan and Schumacher, and Lewis cited in Starr, 2004). To this category can also be added some studies on generic librarian position announcements aimed at specific purposes; discovering the changing workplace demands (Kennan, Cole, Willard, Wilson and Marion, 2006) and the presence of IT skills (Matthews and Pardue, 2008).

In terms of the varied advertizing media covered, the researchers mostly drew samples from job ads in print media (e.g. periodicals), online job lists and mixed media. Those that used job ads in periodicals were of two types. The first category included those focusing on one journal, typically *College & Research Libraries* (Lynch and Smith, 2001; Croneis and Henderson, 2002; and Choi and Rasmussen, 2009). The other category employed more than one journal and to this type included Starr's (2004) work that used *American Libraries* and *Library Journal*.

Those that used online job lists included Marion (2001), Gerolimos and Konsta (2008) and Matthews and Pardue (2008). It must be noted that, with the exception of those of Marion (2001) and Choi and Rasmussen (2009), works with online job lists are more recent than those with print job lists. This is a reflection of the impact of technology on the society that extends to job advertisements. Choi and Rasmussen (2009) only chose the print medium in order to extend the findings of Croneis and Henderson (2002).

Typical studies that used a combination of print and online media included those of Kennan, Cole, Willard, Wilson and Marion (2006) and Shank (2006). Kennan, Cole, Willard, Wilson and Marion (2006) used two newspapers with their associated job search websites in Australia and online job board of a university college in the USA. On the other hand Shank (2006) employed three periodicals (*College & Research Libraries*, *Library Journal* and *The Chronicle of Higher Education*), a job discussion list (libjobs) and an employment website (Educause).

The above reviewed literature reveal the fact that different authors had chosen different focuses and media of advertisements as would serve their various intentions. However, the

advent of technology might occasion a decrease in print advertisements and an increase in online advertisements. The trend tends to be shifting focus to online job advertisements, especially, of recent and technology- based jobs [like the digital librarian position] (Croneis and Henderson, 2002, p.236).

2.2.1 Content Analysis of the Digital Librarian Position

A few studies seem to have been carried out on the digital librarian job position. While Croneis and Henderson (2002) sought, via content analysis, to compare electronic and digital librarian positions using announcements from 1990 through 2000, Choi and Rasmussen (2009), in an attempt to extend their work and covering the period 1999 to 2007, focused on the qualifications and skills that are important for digital librarian positions in academic libraries.

Digital Librarian Positions

Of the 223 advertisements found, Croneis and Henderson (2002) chose and analyzed 50 announcements from 2000, out of which 16 were digital librarian positions. But they provided no details as to the titles. However, Choi and Rasmussen (2009) identified many variations of the digital librarian position and categorized them into five groups as follows:

- i. Digital (library/initiatives/project/preservation/library operations) librarian (coordinator/manager/head)
- ii. Digital (information) services librarian (coordinator)
- iii. Administrative position title such as director, associate director, associate university librarian, assistant dean
- iv. Digital resources (document/collections/maps) librarian
- v. Others

These different titles or job positions might suggest the institutional context underlying their implied responsibilities.

Responsibilities of Digital Librarians

It is pertinent to note that though Choi and Rasmussen (2009) did not concern themselves with responsibilities of digital librarians, they noted that technology has affected the professionals' roles and activities by the new required skills. On the other hand, Croneis and Henderson (2002, p.236) identified 25 digital librarians' job responsibilities as follows:

- Administration
- Supervision

- Digital project/initiatives
- Instruction/training
- Partnerships
- Program development
- Reference
- Technical standards/metadata
- Collection development liaison
- External representation
- Leadership in the field
- Technical/program support
- Web sites/web pages/gateways
- Cataloging
- Collection development
- Funding
- Grants
- Planning
- Policies and procedures
- Preservation
- Production
- Selection and evaluation
- Budgeting
- Database maintenance
- Digital documents

Of these, the most frequently mentioned in the advertisements included administration, supervision, digital projects/initiatives, instruction/training and partnerships. However, in comparison with the electronic librarian positions, three job responsibilities discovered to be unique to the digital librarian positions were projects/initiatives, leadership in the field and production. Similarities between the two categories included instruction/training assignments and collection development liaison duties. The important differences between them were that “electronic” positions involved reference, instruction, collection development and web pages whereas “digital” positions were primarily responsible for administration and project management with emphases on securing funding and overseeing production (Croneis and Henderson, 2002, p.235).

Qualifications and Requirements for Digital Librarians

Croneis and Henderson (2002) focused only on position titles, functional areas and job responsibilities and challenged future studies to include educational qualifications and other requirements as to provide useful information about knowledge, skills and abilities required for electronic and digital positions. This recommendation appears to have paid off in the study of Choi and Rasmussen (2009) on the qualifications and skills for digital librarian positions in academic libraries. They categorized educational requirement for the advertized positions into three; those not stating MLS degree requirement (10 or 11.4%), those

requiring ALA-accredited MLS (69 or 79.3%) and those requiring MLS without mentioning ALA-accredited connotation (8 or 9.2%). Thus possession of an advanced degree was mostly favored for the digital librarian position in that study. In terms of academic library experience, only 13 ads (17.2% of the 87 ads) required between less than 2 to 5 years. The required technological competence (knowledge and skills) appearing in the ads included:

- ❖ Current trends, practices, standards, technology in digital library; digital library environment; digital repositories in academic setting
- ❖ HTML (coding practices), authoring tools
- ❖ Competency on general technical knowledge; computer hardware and software applications; computer skills/computer literacy
- ❖ Current state of IT and its role in Information Science; role of technology in research and academic libraries – understanding and commitment to
- ❖ Mark-up languages/systems (XML, SGML, TEI, EAD, etc); productivity tools for XML mark-up
- ❖ Programming/script languages (C, C++, Java, Perl); web programming
- ❖ Data structure, creation and maintenance, related technologies
- ❖ Web (page) development; web-based services and collections
- ❖ Computer operating systems (DOS, Windows, UNIX/NT)
- ❖ Network, Telecommunication, management (TCP/IP, wireless)
- ❖ Web server
- ❖ Graphic design skills
- ❖ GIS software
- ❖ Information architecture
- ❖ Library integrated systems
- ❖ Systems development, analysis, architecture

However, the technology-related experience as found in the job ads included:

- ❖ Digital library (initiatives/projects/strategies); digital information systems or services
- ❖ Web development; web design; interface
- ❖ Library automated system (integrated library system)
- ❖ (Web) programming (languages); scripting languages
- ❖ Computer platforms (UNIX, Linux, Windows, MacOS)
- ❖ HTML/SGML/XML
- ❖ Information technologies and tools related to academic/online learning environment; technologies to support services and productivity; emerging technologies – implementation and management of; applying technologies to library services; information technology application development, design and deployment
- ❖ Database technology, design and administration
- ❖ Authoring tools/page editors
- ❖ PC and software packages
- ❖ Digital library software/digital asset management tools (ex. CONTENTdm, DSpace, Fedora, Proquest Digital Commons); software/hardware applications used in organizing and presenting digital information

- ❖ System administration and management; systems development, analysis, architecture
- ❖ Multimedia/web delivery of multimedia formats; image delivery technologies
- ❖ Networking; ERL client/server, Web server
- ❖ Implementing search engines

Choi and Rasmussen (2009) also applied the ALA's 8 Core Areas of Competence to their study in view of the required knowledge and skills, and experience. The areas (with the current or final version the document in parenthesis) include:

1. Professional ethics (Foundations of the profession)
2. Resource building (Information resources)
3. Knowledge organization (Organization of recorded knowledge and information)
4. Technological knowledge (Technological knowledge and skills)
5. Knowledge dissemination: service (Reference and User services)
6. Knowledge inquiry: research (Research)
7. Knowledge accumulation: education and lifelong learning (Continuing education and lifelong learning)
8. Institution management (Administration and management).

A few of their findings are worthy of mention. In relation to the required knowledge and skills, institution management competence appeared most. For instance 50 ads (57.4 % of 87 ads) mentioned communication and interpersonal skills. Others in this competence area include project management skills (17 or 19.5 %), diversity (12 or 13.7 %) and management and supervisory skills (9 or 10.3 %). However, in terms of the required experience, institution management [management and supervisory experience] also recorded the highest frequency (17 or 19.5 %). This was followed by knowledge building competence area [creation, development, and management of digital information/document/electronic full-text, e.g. creating and providing access to digital research resources] (13 or 14.9 %).

From the above reviewed literature, it must be noted that academic libraries have had a number of impacting factors, among which technology is very significant and outstanding. That this has been captured in the content analysis studies of various academic librarian job positions is indisputable. However, not so much seem to have been done with regard to the new and emerging digital librarian positions and the few works that exist on this category only used job position ads in the print media, typically journals. It is against the background provided by the literature review that it becomes pertinent to conduct this study on the digital librarian position via content analysis of online job ads.

CHAPTER 3: RESEARCH DESIGN

3.1. Methodology

As Cryer (cited above) noted, interpretive research is essentially qualitative. Therefore, qualitative research design is intended for this study and entails measures that produce findings not arrived at by statistical procedure or other means of quantification (Strauss and Corbin, 1990).

3.2. Data and Data Collection Technique

The data needed came in form of textual information from the chosen websites regarding job advertisements embodying the job titles, responsibilities and competences of digital librarians. The websites, namely: LISjobs.com, ALA JobLIST and Juju job search engine, were chosen on the basis of their authority, coverage (both subject and geographical spread), services offered (search functionalities), ease of usage and containing details or the links to them. For instance, ALA maintains the ALA JobLIST, Rachel Singer Gordon, renowned information professional, is the webmaster of LISjobs.com and Juju job search engine is a new brand for the extant www.job-search-engine.com. All three cover the whole of USA. Although Juju job search engine is a general job search website and not focused on library and information professionals like ALA JobLIST and LISjobs.com, it has depth of coverage for library and information careers. With the increasing use of the web and the decreasing use of print media as advertising media, the choice of the online platform is clearly understood. Invariably the data collection technique was site visits and tracking of the relevant posting information via searching. The period originally intended for coverage was January 1 to March 31, 2010, but a tracking omission made possible an adjustment. Therefore, in principle the period covered was January to May, 2010 (5 months). But specifically, samples were collected for two months respectively from LISjobs.com within January 1-February 28, 2010 and from both ALA JobLIST and Juju job search engine within March 15-May 15, 2010.

The challenges of data collection included:

- Most online job ads are not archived, which makes historical analyses impossible without advance planning for paper or electronic archiving (Starr, 2004) and also impairs using those ads whose details have been removed. This was reflected in the scenario of tracking omission described above.
- Some institutions do not advertise externally but rely on internal recruitment or developing current hands (Croneis and Henderson, 2002). As such job ad information from such institutions cannot be accessed or included. However, the principle of “using the available to get the desirable” would then apply and there was sufficient data for the study from what was published.
- Some jobs require following hyperlinks, going one more level deeper, in order to get the details on them. Such job ads require both time and patience to access

3.3. Sample and Sampling Methods



Figure 1: Screen Shot of Job Posting Ad for Digital Librarians

The nature of the investigation defaults to purposive (non-proportional quota) sampling so that the major considerations were the purpose in mind (WCSRM) and the content of the sites.

The samples for the study were collected from the three websites chosen for the research on purposive basis. However, the unitizing of the samples followed the presentation by White and Marsh (2006). The three units were as follows:

1. Sampling units: serve to identify the population and establish the basis for sampling. For this study the samples were selected based on all professional job ads, within the medium and time chosen, for librarians having the term “digital” in their job titles and/or whose primary but general responsibility is the coordination/management/heading of information (service) in connection with digital library initiatives/projects/preservation/repositories/operations.
2. Data collection units: these are the units for measuring variables. The data collection units for this study were the same as the sample units.
3. Units of Analysis: these constitute the basis for reporting analyses. The units of analysis in this study consisted of:
 - a. Job positions (titles) of digital librarians.

- b. Job responsibilities of digital librarians.
- c. Qualifications of digital librarians (educational [degree] requirement, professional academic/digital library experience [in years], technology-related competences/experience [preferred/required knowledge or skills] and non-technology required competences).

3.4. Data Analysis

Procedure for Data Analysis

The initial data collection template comprised three spreadsheets, one for each of the jobsites under the columns: serial number, job title, published date, employer (type of library/institution) and remark (Relevant or Irrelevant). This was to help eliminate duplicate postings, and to determine the number of job postings within the period. Jobs selected for examination, with their details, were captured in MS Word as to enhance the building of corpus for software analysis. The software intended for this study was TextSTAT (Simple Text Analysis Tool), open source software developed by German Niederlandische Philologie Freie Universitat, Berlin (<http://neon.niederlandistik.fu-berlin.de/en/textstat/>). However, because the samples for the study were few they were analyzed manually.

Method of Analysis

The method for data analysis was qualitative content analysis (Qual CA). Two possibilities exist for Qual CA (White and Marsh, 2006). The first is to present the findings quantitatively through numbers and percentages in simple tabulations (cross-tabulations) to show relationships, which are explained in the textual annotation. The other option is to rely simply on the gradual accretion of details within the textual presentation without resort to numbers. The first option was preferred for this study as it was consistent with recent and similar studies by Croneis and Henderson (2002) and Choi and Rasmussen (2009). As a body that oversees the library profession in the USA, the American Library Association (ALA) has a document embodying some eight (8) core competences of librarianship (Appendix 3) that defines the basic knowledge to be possessed by all persons graduating from an ALA-accredited master's program in Library and Information Studies. This was deemed necessary and employed in this study for the purpose of analyzing the competences of digital librarians appearing in the job ads.

Coding of Data

The inductive process defaulting to Qual CA was favored over the coding scheme of the quantitative version determined a priori, that is before coding begins (White and Marsh, 2006). Thus the research questions provided the initial guide to the analysis as new unfolding patterns were awaited. In this regard a pilot study intended to generate the pattern of analysis was conducted with the January postings on LISjobs.com.

3.5. Limitations of the Study

Time available for the research was noted to be minimal denoting a tight schedule and demanding good time management. Besides, the author was aware of the problem associated with content analysis of job advertisements, that of the difficulty of making substantiated inferences due to too many uncontrolled variables to support far-reaching conclusions (Xu cited in Starr, 2004). Also the fact that most online job ads are not archived makes it difficult for any such study to be repeated in a new light unless with an advance archiving plan.

However, the author endeavored to ameliorate the above mentioned limitations through drawing and following a good research timeline, working within defined framework and advance archiving.

Moreover, it may be worth noting that the author had set out to include the United Kingdom (UK) in the geographical coverage of the study so as to bring in the European context. But, challenged by the difficulty of finding good UK job websites with clearly defined job ads for digital librarians as well as poor response to an online survey of the 50 top UK universities on Webometrics' 2010 ranking, the author decided to focus on USA within the limited time that he had. Thus, the study intended to be a comparative investigation of two countries ended up being a case study. However, while the present study might be a good basis, it is hoped that subsequent studies might be able to achieve this.

CHAPTER 4: DATA ANALYSIS AND PRESENTATION

The units of analysis or basis for reporting the analyses presented in this section cover three broad areas targeted at answering the research questions. They include job position titles, responsibilities and qualifications (educational or degree requirement, academic/digital library [years] experience, technology-related competences/experience and required non-technology competences or experience).

It is pertinent to point out some interpretations made to aid the analysis. The terms “proficiency”, “mastery” and “familiarity” appearing in the samples were interpreted as “required” competences (knowledge and skills). The terms “demonstrated knowledge” and “working knowledge” and the phrase “knowledge and experience” were treated as “experience”, while “desirable/highly desirable” and “additional requirements” were interpreted as “preferred”.

The presentation of the findings follows below under three relevant rubrics or themes; job position titles, responsibilities and qualifications of digital librarians.

JOB POSITION TITLES OF DIGITAL LIBRARIANS

Table 1: Job Advertisements for Work Areas Related to Digital Librarians

Category	Total	Percentage
Digital librarian positions	25	6.06
Academic librarian positions	214	51.94
Non-academic librarian positions	173	42
Total	412	100

A total of 412 job advertisements were identified over the five-month period. Each job advertisement was categorized into one of the following three groups of positions:

- Digital librarian positions: Positions that had the term “digital” in their job title and/or whose primary responsibility had to do with digital library collections/services/initiatives/projects/preservation/repositories/operations.

- Academic librarian positions: Positions meant for professional librarians, other than digital librarian positions specified above, who work in other functional areas of academic libraries.
- Non-academic librarian positions: Positions advertized for professional librarians in libraries other than academic libraries, especially public libraries, as well as non-librarians that are meant to work in those libraries or other non-library institutions.

The first category was of interest to this study. Of this category, 2 (8% of 25 ads) was identified as non-academic library positions and another 2 had no details. These were as a result taken out. Therefore, the remaining 21 (84% of 25) ads, categorized as digital librarian positions in academic libraries, formed the study's basis of analysis. The number might appear to be few, but in comparison to those of previous studies this was an appreciated number. Marion's (2001) study provided no evidence for an identifiable digital librarian job category. The study Croneis and Henderson (2002) discovered that in a three-year period (1998 to 2000) the number of digital librarian job announcements increased from 3 to 16. However, Choi and Rasmussen (2009) study covering a nine-year period discovered 111 digital librarian positions, an average of about 12 per year. Therefore, there is no doubt that as a young and growing profession digital librarian position announcements will keep increasing with every passing year.

Table 2: Titles of the Digital Librarian Positions in Academic Libraries

Title	Frequency	Percentage
Digital services librarian	6	28.6
Head of digital library initiatives	5	23.8
Digital projects librarian	4	19
Web and digital library specialist	4	19
Digital resources manager	2	9.5
Total	21	100

Digital librarian positions found in the advertisements were varied and categorized into five groups. Table 2 shows the actual and representative titles for the position titles in each group. The first and most frequently appearing group comprised the *service-based* positions and included such positions as "Digital Services Librarian", "Digital Repository Services

Librarian”, Library Digital Services Manager”, “Integrated Digital Services Librarian”, “Assistant Professor, Digital Library Services” and “Institutional Repository Librarian”. The second group was for project or departmental *administrative* positions. Examples of the position title included “Digital Projects Coordinator”, “Digital Library Project Director”, “Head of Digital Library Initiatives”, “Project Manager, Digital Lab” and “Head, Digital User Experience Department”. The third group included *program/project-based* positions such as “Digital Projects Librarian”, “Digital Initiatives Librarian”, Digital Curation Librarian” and “Digital Production Librarian”. The fourth group was a position title with *specialist services* thrust indicating a merged or dual functional position with a digital aspect. Examples of the title positions in this group were “Web and Digital Library Specialist”, “Metadata and Digitization Librarian”, Digital Content/Reference Services Librarian” and “Music & Digital Services Librarian”. The fifth and least appearing group was the *resource-based* position title. The examples included “Digital Resources Librarian” and “Digital Collections Coordinator”.

The service, administration, project/program and resource based positions confirmed similar findings by Choi and Rasmussen (2009). However, their order of frequency was different. From the most frequently appearing, they included initiative/project, services, administrative and resource based position titles. Although the “specialist services” position title was not included in their categorization, Choi and Rasmussen (2009, p.460) reflected a similarity in the multi-functional positions in their study. This appears to be a growing development in the job advertisements for digital librarians that is likely to continue.

JOB RESPONSIBILITIES OF DIGITAL LIBRARIANS

Table 3: Categories of Job Responsibilities of Digital Librarian Appearing in the Ads (N=21)

Responsibility Category	Frequency	Percentage
Managerial tasks	45	39.13
Digital programs and technology-related tasks	40	34.78
Service and promotion tasks	14	12.17
Processing tasks	7	6.09
Professional participation	7	6.09
Other	2	1.73

Total	115	100
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Table 3 shows six (6) broad responsibility categories found in the job ads for digital librarian positions, and indicates that the most frequently mentioned were managerial tasks and digital programs and technology-related tasks. While managerial tasks had the highest frequency, digital programs and technology-related tasks was more populous. The population of all categories included as follows:

- **Managerial Tasks:** collaboration, administration, consultation, supervision, grant, licenses, hiring, budget, policies and procedure and documentation/report.
- **Digital Programs and Technology-related Tasks:** digital programs, current trends, support/technical assistance/troubleshooting, web presence/services, integrated library systems (ILS), digital collection development, statistics, digital preservation, digital asset/content management system, usability studies/user testing and digitization.
- **Service and Promotion Tasks:** Reference/research service, customer service, promotion/outreach and training/library instruction.
- **Processing Tasks:** Metadata/cataloging, standards/quality control and workflow.
- **Professional Participation:** professional participation/development and conferences and meetings.
- **Other:** Secondary/assigned tasks.

However, Appendix 1.1 provides the frequency details of these responsibilities and indicates that the most frequently mentioned responsibilities included collaboration, training/library instruction, digital programs, support/technical assistance/troubleshooting, administration, consultation (expert advice), current trends, professional participation/development, Reference/research services, web presence/services and supervision. The findings confirmed administration, supervision, library instruction/training and reference to be among the most frequently mentioned responsibilities of digital librarians in the study of Croneis and Henderson (2002).

Thus, digital (projects, curation and repository) programs and technology-related tasks constitute the major preoccupation of digital librarians. The high relevance of managerial tasks is also highlighted. The implication of both top categories is a requirement of corresponding competences and experience in order to effectively carry out the responsibilities. A correspondingly high occurrence of technology (required/preferred)

competence and experience as well as (required/preferred) managerial competences/experience is observable in Appendices 1.2 - 1.5 (Tables 8-11).

QUALIFICATIONS OF DIGITAL LIBRARIANS

Table 4: Educational Qualification (Degree) Required of Digital Librarians

Required Educational Qualification (Degree)	Frequency	Percentage
ALA-accredited master's degree (MLS/MLIS) or equivalent	14	66.6
Not mentioned ALA-accredited master's degree in Library and Information Science or a related field	6	28.6
Bachelor's degree in Computer Science or a related field or equivalent experience	1	4.8
Total	21	100

Table 4 shows that master's degree in Library and Information Science or its equivalents (20 ads or 95.2%) was overwhelmingly the required qualification for digital librarian positions. Of these, the greater part that mentioned ALA-accredited master's degree would sum up to 66.6% (14 ads), which is lower than 79.3% found in Choi and Rasmussen's (2009) study. The difference reflects a slight shift in favor of increased acceptance of non-ALA-accredited master degree in Library and Information Science or a related field, namely Information Systems/Science/Technology, Archives, Museum, Instructional Technology, Computer Science/Systems Management, Public History or other allied discipline. It does appear that these qualifications might have been found to compete favorably with the ALA-accredited MLS. Such finding may interest library educators in ALA-accredited library schools, who may need to conduct more studies on this with a view to improving their curriculum if need be. Furthermore, the range of these disciplines equivalent to Library and Information Science point to the varied specializations and/or convergence required in digital library projects. Therefore, digital library is a multi-disciplinary subject bestriding the world and divergent interests of research-focused Computer Science community (technology) and the practice-based Library and Information Science community (practical problems). This implies a blurring of the lines between disciplines which is not uncommon with new and developing disciplines. This again challenges library educators to a proper definition of the borders of Digital Librarianship. Interestingly also, 28.6% (6 ads) preferred a second master's degree or post-MLS coursework. Such was mostly a requirement for tenure-track positions.

Table 5: Professional (Academic/Digital) Library Experience Appearing in the Job Ads for Digital Librarian Positions

Professional Experience		Frequency	Percentage
Not required in the ads		5	23.8
Required	No specific years	4	19
	2 years (or more)	5	23.8
	3-5 years	7	33.3
Total		21	100

Table 5 reveals that the total number of ads requiring experience was greater than those without any requirement of academic or digital library experience. But in a previous study by Choi and Rasmussen (2009) the number not requiring academic library experience (56 ads or 64.37%) was more than those requiring it (31 ads or 35.63%). It shows that digital library, though relatively new, imbues its practitioners with experience over time. Therefore, future and subsequent digital library programs predicated on anticipated new and complex applications would always require the experience of the state-of-the-art practitioners for their success.

Table 6: Frequency of (Required/Preferred) Qualifications in Competence Areas for Digital Librarian Positions

ALA Competence Area	Competence (knowledge/skill)	Experience	Total
Foundations of the profession	16	7	23
Information resources	13	16	29
Organization of recorded knowledge and information	11	12	23

Technological knowledge and skills	34	38	72
Reference and user services	11	7	18
Research	1	2	3
Continuing education and lifelong learning	4	3	7
Administration and management	18	18	36
Total	108	103	211

Table 6 represents the summary of the qualifications found in the ads analyzed according to the ALA's Core Competences of Librarianship. The table indicates that competences and experience in technological knowledge and skills were the most frequently mentioned required/preferred competence and experience. This confirmed similar finding in Choi and Rasmussen's (2009) study. Thus, hiring managers expect Library and Information Science (LIS) programs to have become more focused on technological competences and experience.

Details of the coded contents of each competence area in Table 6 as they occurred in the ads are presented in Appendices 1.2 – 1.5.

Appendices 1.2 and 1.3 show the three most frequently mentioned required/preferred technology competences and experience to be content management system/repository software, web design/development/applications/services and standards and technologies (programming and mark-up languages). These three competences must be noted as being all-encompassing and at the core of the role of a digital librarian in the digital information system management (DIMS). Sreenivasulu (2000) defined DIMS as referring to the overall competences (knowledge, know-how, skills and attitudes) necessary to create, store, analyze, organize, retrieve and disseminate digital information (text, images, sounds) in digital libraries or any type of information. Thus, the content management software skills would help to capture, store and organize digital information. Knowledge of the standards and technologies enables web applications and services to enhance web presence and online access to such content.

As Appendices 1.4 and 1.5 show, there was a high frequency of requirements for interpersonal/communication skills, knowledge organization, digital collections management, project management skills as well as the ability to work independently and collaboratively. The finding confirmed Choi and Rasmussen's (2009) study, which discovered that communication and interpersonal skills and project management skills were the most

frequently occurring non-technology competences. This reflects the reality of team-based approaches in project management and interpersonal skills are a key to success in team efforts (Choi and Rasmussen, 2009, p.464). The growing emphasis on communication and interpersonal skills were also confirmed in previous studies by Lynch and Smith (2001), Marion (2001) and Starr (2004). Team work requires collaboration. As such, the ability to work individually and collaboratively is a strategic competence. Digital collections (content format) management entails the organization of digital content and metadata (knowledge organization standards) reflects attempt to create access to such resources. Metadata was also high occurring competence in the study of Choi and Rasmussen (2009).

CHAPTER 5: DISCUSSION AND CONCLUSION

The purpose of this study was to gauge the technology-induced changing image of librarians in the context of the digital environment of academic libraries via their job titles, responsibilities and qualifications as found in chosen online job mailing lists. The study shows that for the identifiable five categories of position titles, meant to shoulder five categories of responsibilities, master's degree in Library and Information Science or its equivalent was required. About a third, mostly tenure-track positions, preferred a second master's degree for the positions. More than two-third of the job advertisements also required academic or digital library experience. Of the eight (8) ALA's Core Competences of Librarianship, the technological knowledge and skills were the most frequently mentioned required/preferred competences and experience. The top three competences and experience included content management system/repository software, web design/development/applications/services and standards and technologies (programming and mark-up languages). Equally important is a high frequency of requirements for some non-technology skills, notably interpersonal and communication, knowledge organization (metadata and cataloging), digital collection management and project management skills as well as the ability to work independently and collaboratively. These have great implications for librarians seeking to work as digital librarians as well as for the library educators/schools.

5.1 Implications for Prospective Digital Librarians

Electing to work in the digital library environment entails understanding or considering such issues as highlighted by the findings above. This informs a good background for career planning and development. The study reveals the five bases of the digital librarian position titles to be service, administration, digital programs (projects), specialist services and resources. On top of these are the digital program and technology-related tasks, managerial tasks, service and promotion tasks, processing tasks and professional participation that constitute the responsibilities of the digital librarian. To fulfill these responsibilities require such technological competences and soft skills that this study highlights. One would have to appraise him/herself realistically on the basis of these. Library schools are meant to equip library graduates with basic requisite competences for real work life. But these basic competences may not qualify students for most positions such as digital librarian in some library settings. The situation becomes more complex with the demand of experience. It may be that one may have to first seek an employment where the initial competences he/she has may fit him/her. While gathering experience, personal development and/or enrolling for a formal course of specialization will be a useful consideration. Such specialization that leads to a second master's degree is indispensable for tenure-track positions.

5.2 Implications for Library Educators/Schools

Digital libraries constitute a new specialization in Librarianship that embraces other related disciplines and so have some challenges for educators in library schools. First, the multidisciplinary nature of digital librarianship with blurred or amorphous boundaries create “crisis” in library education as to what the subject constitutes. The competences required/preferred in the job ads used in this study suggest that the curriculum must include some aspects of Information System/Science and Computer Science (e.g. digital asset/content management system, programming/mark-up languages, etc). This implies a recognition of LIS programs as being relevant to digital libraries, which decreases the need for reliance on Computer Science. Second, the need to reflect professional trends and developments in the curriculum of library schools entails monitoring and conducting researches. Third, documents on core competences developed by leading practitioners (hiring managers) on behalf of professional organizations need be used by library educators in curriculum planning and development. In the light of all these, it behooves library educators to provide their graduates with a core set of competences, especially the technology skills, that they need to fulfill their professional lives. On this, Neal (2009, p.52) concluded, “If schools do not ensure their graduates possess these core competences, they are doing their students – and the profession a disservice”.

Neal (2009) discussed the role of LIS programs with regard to library graduates including prospective digital librarians. Six options can be gleaned in this regard. They include:

1. Offering continuing education courses to help librarians stay current.
2. Requiring students to take a technology course as a requirement for the master’s degree.
3. Mandating incoming students to demonstrate technology competency.
4. Ensuring that students have access to adequate hardware and software (e.g. keeping technology in computer labs up to date so that students can have hands-on experience with the latest technology).
5. Requiring a practicum or internship to complete the master’s program (i.e. field experience).
6. Integrating technology skills throughout all courses in the curriculum.

The cost-benefit analysis of each option needs to be made against the intended objectives of the curriculum in order to ascertain the best option to adopt in a given environment.

5.3 Reflection on the Study and Way Forward

Two previous studies similar to the present study by Croneis and Henderson (2002) and Choi and Rasmussen (2009) used ads from a print medium, namely *College & Research Libraries*. The second was an extension of the first and opened up the opportunity for follow up studies. It was natural and doable to further extend their studies using the same medium but for the fact that this author considered the increasing shift of advertisers from the print to the online environment due to technological advancements. Moreover, content analysis approach used in this study could equally have been employed in some other way, such as the interview of key practitioners in digital environment of the academic library community of, for instance, the countries within the DILL consortium. But that would have required much time as well as proficiency in the required languages, which this author did not have. Such communities could also be surveyed using a quantitative framework. However, the time available to the author for this research was limited. More studies using any of these approaches are encouraged in order to confirm the findings of this study, which provide the right frame or guide for such studies.

5.4 Conclusion

The study confirms that technology-driven digital libraries have brought technological context into both the responsibilities and the corresponding competences of librarians working in digital environment of academic libraries. This entails new challenges to academic librarians as well as library schools expected to turn out competent hands to man the digital programs, resources and services in these libraries. The requisite competences, especially the technological knowledge and skills, therefore, translate into a new image and expectations on the academic librarians working in digital environments. Thus, by the job ad information digital librarians are seen as professionals who can effectively use technology to render needed and useful information service. The extent to which prospective digital librarians and library schools successfully respond to these challenges will determine the progress and development of the library profession, the usefulness of academic libraries and how library users will continue to perceive librarians.

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APPENDICES

Appendix 1.1: (Table 7) - Job Responsibilities of Digital Librarians Appearing in the Job Ads (N=21)

Responsibility	Frequency	Percentage
Collaboration	14	66.7
Training/library instruction	10	47.6
Digital programs	8	38
Support/technical assistance/troubleshooting	7	33.3
Administration	7	33.3
Consultation (expert advice)	6	28.6
Current trends	6	28.6
Professional participation/development	6	28.6
Reference /research services	6	28.6
Web presence/services	5	23.8
Supervision	5	23.8
Promotion/outreach	4	19
Grant	4	19
Integrated library system (ILS)	3	14.3
Liaison	3	14.3
Collection development	3	14.3
Statistics	3	14.3
Metadata/cataloging	3	14.3
Content management	2	9.5
Secondary/assigned tasks	2	9.5

Preservation	2	9.5
Licenses	2	9.5
Workflow	2	9.5
Documentation/report	2	9.5
Standards/quality control	2	9.5
Evaluation	2	9.5
Hiring	2	9.5
Budget	2	9.5
Policies and procedure	1	4.8
Conferences and meetings	1	4.8
Customer service	1	4.8
Digitization	1	4.8

Appendix 1.2: (Table 8) - Technology (Required/Preferred) Competences (Knowledge and Skills) of Digital Librarian Positions (N=21)

Category	Frequency*	Percentage
Content management system/repository software	8	38
Standards and technologies (programming and markup languages)	4	19
Web design/development/applications/services	4	19
Operating systems/platforms; computer skills	3	14.3
Current trends (technologies)	3	14.3
(Relational) database management	2	9.5
Office productivity software (word processing, spreadsheet, etc)	2	9.5
Troubleshooting; Technology support/skills	2	9.5
Integrated library system (ILS)	2	9.5
Network (administration/tools)	2	9.5
Retrieval (protocol)	1	4.8
Course management system	1	4.8

Note: *n=34 instances

Appendix 1.3: (Table 9) - Technology (Required/Preferred) Experience for Digital Librarian Positions (N=21)

Category	Frequency*	Percentage
Content management system/repository software	10	47.6
Standards and technologies (programming and markup languages)	10	47.6
Web design/development/applications/services	6	28.6
Database management	3	14.3
Operating systems/platform; computer skills	3	14.3
Troubleshooting; technology support/skills	2	9.5
Office productivity software (word processing, spreadsheet, etc)	1	4.8
Protocol	1	4.8
Systems management	1	4.8
Discovery tool/platform	1	4.8

Note: *n=38 instances

Appendix 1.4: (Table 10) - Non-technology (Required/Preferred) Competences (Knowledge and Skills) of Digital Librarian Positions (N=21)

ALA Competency Area	Competence	Frequency	Percentage
Foundations of the profession	Interpersonal and communication skills	12	57.1
	Copyright laws/rights management	3	14.3
	Licensing	1	4.8
Information resources	Digital collections management/content format	6	28.6
	Digitization/digital conversion	4	19
	Digital preservation	2	9.5
	Open access/scholarly communication	1	4.8
Organization of recorded knowledge and information	Knowledge organization (metadata/cataloging/controlled vocabularies/descriptive) standards	8	38
	Organizational skills	3	14.3
Reference and user services	Library instruction, outreach and reference services	3	14.3
	Creativity; critical and analytical thinking	2	9.5
	Customer service	2	9.5
	Attention to details	2	9.5
	Statistics	1	4.8
	Information seeking behavior	1	4.8
Research	Publications	1	4.8
Continuing education and	Flexibility	2	9.5
	Learn and apply technology quickly	1	4.8

lifelong learning	Professional development	1	4.8
Administration and management	Ability to work independently/collaboratively	7	33.3
	Collaboration	5	23.8
	Project management/multi-tasking	3	14.3
	Grant-fund; budgeting	2	9.5
	Leadership	1	4.8

Appendix 1.5: (Table 11) - Non-technology (Required/Preferred) Experience for Digital Librarian Positions (N=21)

ALA Competency Area	Experience	Frequency	Percentage
Foundations of the profession	Interpersonal and communication skills	4	19
	Intellectual property policies	1	4.8
	Consortial purchasing agreement	1	4.8
	Workplace behavior	1	4.8
Information resources	Digital collections management; content format	8	38
	Repository/Preservation	4	19
	Digitization/digital conversion	3	14.3
	Digital information concepts	1	4.8
Organization of recorded knowledge and information	Knowledge organization (metadata/cataloging/controlled vocabularies/descriptive) standards	12	57.1
Reference and user services	Critical and analytical thinking	2	9.5
	Library instruction/training	2	9.5
	Speed and accuracy	1	4.8
	Customer service	1	4.8
	Reference service	1	4.8
Research	Scholarly interests/accomplishment	1	4.8
	Research service	1	4.8

Continuing education and lifelong learning	Flexibility	2	9.5
Administration and management	Project management/multi-tasking	8	38
	Leadership/supervision	3	14.3
	Collaboration	3	14.3
	Grant-fund; budgeting	2	9.5
	Ability to work independently/collaboratively	2	9.5

Appendix 2: Digital Librarian Job Posting Samples for DILL Master Thesis

1. Digital Resources Manager

Texas A&M University-San Antonio Library, San Antonio, Texas

Posted 4/1/2010:

The Texas A&M University-San Antonio Library seeks an entrepreneurial librarian to become the founding Digital Resources Manager in a newly created library. This position will launch local electronic resources collections, administer new and existing licenses, and provide technical content management for all e-resources, including maintaining a remote access server and link resolver, developing e-resource management systems, assisting patrons with access problems, and gathering and reporting usage statistics. The Digital Resources Manager will design and maintain the library's web presence and assist with library instruction and reference services on a regular basis.

Required qualifications:

ALA accredited Masters of Library and Information Science. Three years of experience in an academic library with job duties directly relevant to this position. Mastery of information technology concepts related to electronic resources and digital content management. Proficiency with spreadsheet and word processing programs, vendor websites, and web editing tools. Knowledge of electronic resource licensing, usage statistics, integrated library systems, bibliographic record loading, and tools such as proxy servers, link resolvers, and A-Z lists.

Preferred qualifications:

Coursework or experience with XHTML, XML, XSLT, and metadata standards (Dublin Core, MARC21, MODS, EAD, etc.). Experience with library consortial purchasing agreements. Experience providing library instruction and reference services in an academic library.

2. Digital Production Librarian

Claremont University Consortium, Claremont, California

Posted: 14/1/2010

Position Summary: The Digital Production Librarian for the Claremont University Consortium will work with faculty and staff from the seven Claremont Colleges and librarians on digitization projects for dissemination in the Claremont Colleges Digital Library (CCDL) and manage the full operations of the Digital Production Center including staffing, budget, digital conversion, metadata application, quality controls, production workflows, reports, cost analysis and documentation for training, policies and procedures. This position reports to the Director of Digital Initiatives, Records Management and Archives. This is an

exempt, full-time (40.0 hrs = work week), 12-month, benefits-eligible position. Claremont University Consortium provides an attractive benefits package

Position Type and Compensation: Full-time, regular, exempt position, benefits-eligible. Compensation: minimum \$45,000 annually.

Essential Functions:

- Manage the operations of the Digital Production Center.
- Strategic planning for the Digital Production Center.
- Purchase, maintain and upgrade digitization hardware and software.
- Collaborate with library staff and college faculty to select appropriate materials for CCDL collections.
- Design and implement production workflows for digitization and metadata application.
- Schedule digitization/metadata projects and ensure quality outputs.
- Provide written progress reports on digital projects.
- Determine digitization cost for each project.
- Identify digital storage needs and recommend storage medium.
- Train faculty, students and staff from the Colleges on digitization.
- Effective outreach to faculty and students to promote the growth and use of the Claremont Colleges Digital Library.
- Maintain documentation on training, policies, procedures and guidelines.
- Participate in departmental and libraries-wide committees and work groups established to further the mission of the Libraries of The Claremont Colleges.
- Staying current with emerging trends, technology, user needs and services in a digital library environment.

Requirements:

- MLS/MLIS from an ALA accredited program.
- Minimum 3 years experience working in an academic digital production environment.
- Experience supervising staff and students, including professional performance evaluations and payroll record keeping.
- Experience with digital conversion for all formats including audio and video.
- Knowledge of current digitization best practices for all formats.
- Experience applying Dublin Core Metadata Elements and technical metadata for supporting long-term archiving.
- Knowledge of current and emerging metadata standards such as METS, MODS, PREMIS, DDI, etc.
- Proficiency using FTP, VPN, shared drives and Microsoft Office Suite software, particularly Excel.
- Understanding of copyright laws and rights management issues in a digital environment.
- Familiarity with Open Access repositories, and scholarly communication.
- Experience training staff and students in a technical environment.
- Experience using digital asset management software.

- Knowledge of how digital library collections are used in an academic setting.
- Familiarity with digital preservation and a trusted digital repository.
- Advanced PC and Mac computer skills, and commonly-used digital productivity and internet applications.
- Effective oral and written communication skills.
- Effective planning, time management and organizational skills.
- Ability to work independently and in a team environment.
- Adeptness at working in a rapidly changing technological environment.
- Ability to establish and maintain cooperative working relationships.

Additional Qualifications Desired:

- Experience with CONTENTdm.
- Knowledge of grant funding agencies and participation in grant writing and oversight.
- Effective budget oversight.

3. **Posted 21/1/2010:** NC Digital Heritage Center Digital Projects Librarian, UNC Chapel Hill University Library, Chapel Hill, North Carolina

POSITION: NC Digital Heritage Center Digital Projects Librarian

****Fixed-Term Appointment** AVAILABLE: April 1, 2010**

The University of North Carolina at Chapel Hill seeks an organized, collaborative, and collegial individual for the position of Digital Projects Librarian in the North Carolina Digital Heritage Center.

The North Carolina Digital Heritage Center is a new program, housed in the North Carolina Collection in the Wilson Special Collections Library. The Center will provide digitization and hosting services for cultural heritage institutions in North Carolina. This new position will manage day-to-day digitization and online publication of library, museum, and archival materials from partner institutions, and will coordinate many of the Center's dealings with repositories in the state.

The Digital Projects Librarian will report to the Center's Program Coordinator. The Digital Projects Librarian and Program Coordinator will work with staff in institutions and organizations throughout the state to develop and implement new digitization projects. The Digital Projects Librarian will oversee and closely monitor all aspects of digital projects, including digitization of original materials, description of materials according to accepted metadata standards, and the online publication of digital objects using CONTENTdm or other digital collection management tools. The Digital Projects Librarian will be responsible for hiring, training, and supervising student assistants, and will play an important role in assessment, planning, and training for participating repositories, including establishing and providing training on metadata standards and digitization workflows. Travel, including occasional overnight trips, will be required.

QUALIFICATIONS

Required: ALA-accredited MLS. Experience with digital collections, including the description of materials using accepted digital library standards such as Dublin Core, MODS, or METS. Demonstrated ability to handle multiple projects and tasks simultaneously, to successfully balance competing priorities, and to work with inflexible deadlines. Excellent communication skills and the ability to work well within a highly collaborative, team-oriented environment. Demonstrated ability to work independently, with minimal supervision.

Preferred: Project management experience. Experience working on multi-institution collaborative projects. Knowledge of CONTENTdm and website development. Knowledge of North Carolina history, literature, and culture

4. Digital Services Librarian

Loyola University Chicago Libraries

Posted: 25/1/2010

Job Description

Loyola University Chicago invites applications from enthusiastic, self-motivated librarians to join our team. Librarians at Loyola University Chicago have faculty status, but are non-tenured and receive 12 month appointments. The University Libraries anticipate implementation of a system of rank and promotion in the near future.

Job Summary:

The Digital Services Librarian provides expertise in creating, managing and preserving local digital collections. This position also works collaboratively with electronic resources librarians to support access to online databases, full-text journals. The Digital Services Librarian reports to the Head of Library Systems.

The incumbent will provide support for digital special collections, electronic theses and dissertations (ETDs), and other born-digital and retrospectively digitized materials. S/he will coordinate all aspects of each digitization project including developing the workflow and implementing metadata standards. S/he will work with CONTENTdm, OAI data services, and other open source or locally-developed content management applications.

Job Responsibilities:

1. Provide support to use of library digital resources and services, including digital content management, electronic theses and dissertations, finding aids to local special collections.
2. Participate in developing and maintaining the University Libraries' web site, which is the central place providing access to library digital content

- and services.
- 3. Develop, maintain, and provide enhancements to digital library applications to ensure effective and efficient delivery of library digital resources and services.
- 4. Troubleshoot and resolve issues related to electronic
- 5. Keep current with trends in web and digital library technologies.

Job Requirements

Qualifications

Required

- Masters degree in library and/or information science from an ALA-accredited program or international equivalent;
- Working Knowledge of relevant standards and technologies, such as PHP, Perl, JavaScript, XML/XSLT, XHTML, CSS, and SQL;
- Excellent oral and written communications skills;
- Commitment to user-oriented service;
- Two or more years of professional experience, academic library environment preferred

Preferred:

- Direct experience with digital/web applications and systems;
- Programming or web development experience;
- Awareness of current issues and trends in metadata.

5. Digital Projects Coordinator

The University of North Carolina at Greensboro, Greensboro, North Carolina

Posted: 26/1/2010

The University Libraries at The University of North Carolina at Greensboro is seeking an enthusiastic individual to create, manage, and provide access to the University's rapidly growing digital collections. Reporting to the Assistant Dean for Electronic Resources and Information Technologies, this tenure-track position is part of the Electronic Resources and Information Technology Department and also works closely with departments and units throughout the Libraries on a wide variety of digital initiatives.

Responsibilities:

Coordinates and supervises the creation, delivery, and preservation of the Libraries' digital collections, especially digitized surrogates of materials deemed to have historical or institutional significance.

Responsible for general management of the Digital Projects Unit, including supervision of 1-2 full-time staff and several student assistants in the Libraries' Digitization Lab. The unit provides digitization, description, and hosting services for materials held within the Libraries' Special Collections and University Archives Department, at various departments on campus, and with external partners.

Serves as a member of the Libraries' Digital Projects Priorities Team to evaluate digital initiatives, establish priorities, and allocate resources to approved projects. Coordinates interdepartmental digital projects and provides project management expertise.

Provides consultation or manages other digital initiatives in the Libraries, including those relating to metadata, electronic records management, emerging digital technologies, and scholarly communication, such as e-journal hosting and institutional repository development.

Identifies and pursues grant opportunities; manages grant funds and reports back to granting agencies.

Actively participates in research and University and professional service as a tenure-track librarian.

Qualifications:

ALA accredited MLS degree.

Minimum of two years experience working with digital projects.

Documented experience with XML-based metadata schema (such as Dublin Core, MARCXML, OAI, MODS, EAD, and TEI), controlled vocabularies/descriptive standards (such as DACS, TGM, and AAT).

Documented experience with the hardware and software required to create, store, organize and deliver digital content in multiple formats, especially Adobe Photoshop CS.

Documented knowledge of digitization best practices and project management experience.

Familiarity with various digital image, text, and audio formats.

Excellent written, oral and interpersonal communication skills.

Ability to work collaboratively in a team environment and to manage multiple projects and priorities successfully.

Preferred Qualifications:

Knowledge of ContentDM.

Experience in web design or audio digitization.

Familiarity with relational databases and relevant copyright law.

Two years experience in an academic library or archival repository.

Masters degree with concentration in archival studies.

6. Digital Repository Services Librarian

George Mason University, Fairfax, Virginia USA

Posted 28/1/2010:

The George Mason University Libraries seek a Digital Repository Services Librarian. This position serves as head of the MARS (Mason Archival Repository Service) program at Mason. Duties include managing the service, handling associated technology and related administrative workflows, and leading audience-building efforts of University Libraries in

support of the service. MARS employs DSpace to satisfy digital archiving needs as well as more traditional IR services. The successful candidate will have a strong understanding of current metadata schemas, standards, and protocols (such as Dublin Core, MODS, METS, and OAI-PMH); experience with one or more digital content management systems; academic library experience working directly with faculty; experience managing projects and meeting deadlines; an awareness of current trends in open access and digital archiving and excellent communication skills. Position reports to the Associate University Librarian, Digital Programs and Systems. Required Qualifications: an ALA-accredited MLS or ALA-recognized foreign equivalent; knowledge of current metadata standards and technical competency in digital content management systems; experience working with faculty in an academic library setting; demonstrable technology skills and excellent communication skills; and ability to meet requirements for reappointment and promotion. Appointment at Librarian I - up to \$55,000; Librarian II - up to \$60,000 Preferred Qualifications: experience with one or more digital content management systems; DSpace experience preferred; second master's degree or post-MLS coursework. Appointment/Benefits: 12-month professional faculty appointment with rank dependent on qualifications and experience. Health plan options and paid life insurance; several retirement plans including TIAA-CREF; 24 vacation days and 11 paid holidays; and tuition waiver for self. George Mason University is a member of the Washington Research Library Consortium, the Virtual Library of Virginia, the Center for Research Libraries and the Association of Southeastern Research Libraries. For more information please visit <http://library.gmu.edu> or <http://www.gmu.edu/>. All applications for position number FA463z MUST be submitted online at George Mason's employment page (<https://jobs.gmu.edu/>).

7. Digital Curation Librarian, Librarian I

Michigan State University Libraries, East Lansing, Michigan, USA

Posted 16/2/2010:

Description: Reports to the Assistant Director for Digital Information. Working closely with staff in Digital and Multimedia Center, Library IT, Preservation, and other library units, as well as with partners at other institutions, the Digital Curation Librarian will: Plan, develop and provide leadership for a digital curation program for Library collections by reviewing existing library practices and analyzing needs and establishing policies and best practices for the long-term protection and access to digital materials, both created by or acquired for the library. Digital collections formats comprise text, image, audio-visual resources, and research data sets. Collaborate in planning, creating, and managing digital collections. Implement quality control procedures. Identify and collaborate with technical partners within the library, campus and consortial communities. Participate approximately quarter-time in a secondary assignment based on qualifications, interests and need; may include work in areas such as reference, instruction, cataloging, or collection development. Participate in professional development and research activities and serve on library and university committees as elected or assigned. Other appropriate duties as assigned. Qualifications: Required: Master's degree from an ALA-accredited program; broad understanding of emerging trends in digital technologies; knowledge of digital preservation standards and best practices for a variety of formats; knowledge of standards-based

metadata schema, such as XML, MODS, METS and PREMIS; excellent interpersonal, oral and written communication skills; ability to be flexible in a dynamic and changing environment; ability to work effectively with diverse faculty, students, and staff; ability to work independently and collaboratively; ability to prioritize and balance various unit needs; attention to detail. As librarians are appointed as regular faculty in the continuous appointment system, also required are preparation and commitment to conduct independent scholarship consistent with a librarian appointment; and capacity and commitment to engage independently in continuing professional development. **Preferred:** experience with HTML, CSS, XSL; familiarity with programming languages such as Java; experience with repository software technologies. Compensation: \$46,000 minimum.

8. Digital Library of Appalachia Project Director

Posted 25/02/2010:

Appalachian College Association, Berea, Kentucky

ACA Digital Library of Appalachia

Project Director (Revised and Reposted)

Job Summary:

The Digital Library of Appalachia Project Director is a two-year grant-funded position working within the Appalachian College Association (ACA) that is responsible for upgrading and enhancing the Digital Library of Appalachia (DLA). The ACA is a consortium of 36 private institutions serving the Appalachian regions of Kentucky, North Carolina, Tennessee, Virginia, and West Virginia. The DLA provides online access to archival and historical materials related to the culture of the southern and central Appalachian region. The contents of the DLA are drawn from special collections of ACA member institutions.

Job Responsibilities:

The Digital Library of Appalachia Project Director reports to the Coordinator of Library Programs and works collaboratively with other program staff. The Project Director:

- Contributes to the building and promotion of the DLA and its resources to other ACA institutions and the scholarly community at large, including the addition of archival materials, maintaining and updating the DLA website, and participating in outreach activities.
- Designs and implements workflows for digitization and metadata application.
- Works with external organizations to upgrade the hardware and software and contract for training for ACA institutions.
- Provides follow-up and as needed training at all participating institutions.
- Collects, compiles, analyzes and distributes statistics detailing the activities of the DLA, including, but not limited to: database usage statistics, event attendance data, and any data required for external reporting.
- Explores and develops future grant possibilities in collaboration with the Coordinator of Library Programs.

1. Job Requirements:

- Possess a master's degree in Library Science or a related field (Archives, Museum Studies, Instructional Technology, etc.) OR equivalent education and experience.
- Experience in successfully directing complex projects through to completion.
- Ability to work creatively, collaboratively, and effectively both as a team member and independently.
- Knowledge of current digitization best practices for all formats.
- Experience maintaining and updating websites.
- Preferably have familiarity with CONTENTdm software.
- This position is located at the ACA office in Berea, KY, but requires extensive travel throughout the region served by the ACA to train staff in the use of CONTENTdm and the DLA.
- Have excellent written and oral communication skills, demonstrated leadership ability, and creative and innovative problem-solving skills.

Compensation:

- This is a two year contracted consulting position.
- Compensation is commensurate with experience.

9. Library Digital Services Manager

St. Edward's University Scarborough-Phillips Library, Austin, Texas

Posted: 15/03/10

Scope:

The Scarborough-Phillips Library at St. Edward's University seeks a creative, innovative individual to provide leadership in all things digital including but not limited to the library's web presence, digitization initiatives, integrated library systems, and cooperative ventures with other departments on campus and at other universities. This position reports to the Library Director. Salary in the upper 50's to low 60's.

Responsibilities:

- Coordinate with the University Web Team to redesign the library's website and monitor and recommend web-based technologies to enhance the library's web presence and user access.
- Maintain, update and support the integrated library system, Innovative Interfaces, Inc. (III).
- Coordinate and provide technical expertise and training for digitization projects using III's Content Pro, VuFind, and other platforms to integrate visual, print, and audio collections into the library's web presence.
- Collaborate with Instructional Technology and library staff to create new and support existing platforms for library reference and instruction, including tutorials, online chat, streaming media, podcasting, and 3rd party software.
- Provide technology support for resource sharing.
- Keep abreast of current trends in technology as relevant to the academic library.

- Library's primary liaison with campus IT dept.
- Serve as resource for library staff.

Qualifications:

- ALA-accredited master's degree or equivalent terminal degree in related areas such as MSIS, computer science, or information systems required. Two years' experience with web development or technology support services in a library or academic setting preferred.
- Experience with Innovative Interfaces' Millennium system preferred.
- Demonstrated familiarity with developing and maintaining dynamic data-driven websites with relevant standards and technologies such as PHP, XML/XSLT, XHTML, CSS, JavaScript, and UNIX-like environments required.
- Familiarity with digital media industry standards and production of high-quality audio, video and images required.
- Demonstrated effective oral, written and interpersonal communication skills.
- Demonstrated ability to think critically and analytically and to work in a collegial, collaborative service-focused environment.
- Familiarity with information retrieval protocols and digital library standards such as Z39.50, PREMIX, or MIX required.
- Familiarity with copyright laws and digital rights management preferred.
- Successful completion of a employment and/or criminal background check required.

10. Web and Digital Library Specialist

Posted: 24/03/10

The Center for Research Libraries, Chicago, Illinois

The Center for Research Libraries (CRL) is seeking a creative Web and Digital Library Specialist. Under the direction of the Director of Information Systems, the candidate selected will work independently to design, develop and implement grant and non-grant funded web projects.

Essential Duties:

1. Conduct development and system administration on Drupal content management system: evaluate and implement modules, implement and monitor work flows, develop site wide theming, template, content type, etc.
2. Develop and update web applications with database driven and/or XML based dynamic contents
3. Conduct interface design, integration and customization of Web applications and products acquired from third party, including open sources products
4. Develop and implement applications to integrate web contents from multiple servers, including internal CRL web servers and those from partner institutions
5. Work closely with Web Group and other staff to ensure accurate and up-to-date contents on internet and intranet Web servers
6. Create templates and other tools to facilitate web authoring activities by non-technical

staff

7. Monitor, troubleshoot, de-bug and modify existing Web applications
8. Assist CRL member institutions in developing best practices and optimizing access to CRL digital resources
9. Depending on project assignments, may be required to lead team effort or coordinate the work of others

Skills Experience & Education Requirements

1. Minimum of two years experience programming web enabled applications, including some start-to-finish project responsibility
2. Bachelors' degree in Computer Science, Information Systems or a related field, or equivalent experience
3. Solid skill in Web design and development; proficient in XHTML, CSS and DHTML
4. Proficient in PHP programming language and JavaScript
5. Knowledge and ability to build complex SQL queries against relational databases
6. Excellent troubleshooting and problem solving skills

Preferred Qualifications:

1. Knowledge and experience in UNIX/Linux administration
2. Experience with managing and module development in Drupal or other content management system
3. Experience in developing multimedia (audio/video) Web content
4. An MLS, course work or seminars pertaining to digital preservation/archiving and Web development

The Center for Research Libraries (CRL) is a consortium of more than 250 leading U.S. and Canadian academic and research libraries based adjacent to the University of Chicago's Hyde Park campus.

11. Digital Initiatives Librarian

**Vassar College,
Poughkeepsie , New York**

Posted: 06/04/10

Vassar College seeks a Digital Initiatives Librarian. This is a new position reporting to the Library Director with dotted-line reporting to the Assistant Director of the Library for Technology. As a vital member of the library team, the Digital Initiatives Librarian will lead the College in the creation, delivery, preservation and on-going support of digital projects and collections in the broadest sense. This librarian will also provide vision, guidance and advocacy for a digital repository system that responds to the needs of the College community and is aligned with collections and preservation priorities.

Working with colleagues in the Library and across the College, in particular computing

professionals from Computing and Information Services, the Digital Initiatives Librarian will be responsible for initiating and developing a program that will involve the management, creation, preservation, and maintenance of digital projects and content in support of the educational, historical and scholarly needs of the College. The Digital Initiatives librarian will guide the development of a digital repository system to make accessible and to preserve the intellectual output of the College. Additionally, this librarian will recommend and implement appropriate technology solutions to support all aspects of the program.

In collaboration with colleagues in the Library and in College Relations, the Digital Initiatives Librarian will also be responsible for coordinating the on-going development of the library website. In addition, the Digital Initiatives Librarian will be called upon for some research desk service. Depending on subject expertise, this librarian may participate in the liaison program and/or teach in the instruction program.

Located in the scenic Mid-Hudson Valley, 75 miles north of New York City, Vassar College is a highly selective, residential, coeducational liberal arts college. Vassar is strongly committed to fostering a community that reflects the values of a liberal arts education and to promoting an environment of equality, inclusion and respect for difference. Vassar College is an affirmative action, equal opportunity employer, and applications from members of historically underrepresented groups are especially encouraged.

Qualifications:

We are seeking a candidate who understands the importance of the library in the academic life of a residential undergraduate liberal arts college. The successful candidate will have demonstrated knowledge of current and emerging trends, issues and best practices in digital library initiatives and projects and the technologies used to support those initiatives. This candidate should also be able to display ingenuity and maintain a professional demeanor in solving problems and working with people.

Required: MLS or equivalent degree or experience; at least 3 years experience working with digital projects and collections, preferably in an academic setting, excellent project management skills, extraordinary oral, written and interpersonal skills and demonstrated ability to work as a member of a team. Demonstrated technical proficiency in the tools and technologies related to digital repositories and digital collection development. Working knowledge of metadata standards. Experience with and knowledge of library discovery tools and platforms. Understanding of the impact of technology on library work today and into the future. Ability to collaborate effectively with faculty, administrators and staff.

Highly desirable: Experience on a research/reference desk at an academic library. Additional advanced degree(s) and/or demonstrated scholarly interests and accomplishments.

12. Institutional Repository Librarian

**Eastern Illinois University,
Charleston, Illinois**

Posted: 12/04/10

Eastern Illinois University is seeking a librarian for a 12-month, tenure-track position. Reporting to the University Archivist, the individual will be responsible for developing and managing an online institutional repository. Other duties may include collection development for one or more disciplines, service at the reference desk, and supervision of staff and student employees.

Candidates must possess an ALA-accredited MLS; a second master's degree is preferred, and is required for assistant professor rank and for tenure. We prefer applicants with digital assets management and archival experience, and knowledge of copyright issues. An academic background in the sciences or business is desirable. Success in the position will require strong computer and organizational skills, effective communication abilities, and a dedication to public and institutional service.

13. Head of Digital Library Initiatives

**Temple University,
Philadelphia, Pennsylvania**

Posted: 13/04/10

Temple University of the Commonwealth System of Higher Education is a comprehensive public research university with more than 35,000 students. It has a distinguished faculty in 17 schools and colleges, including schools of Law, Medicine, Pharmacy, Podiatry, and Dentistry, and a renowned Health Sciences Center. Temple is one of Pennsylvania's three public research universities, along with the University of Pittsburgh and Penn State University. Temple University is the 28th-largest university in the United States, and it is the 6th-largest provider of professional education (law, dentistry, medicine, pharmacy, and podiatric medicine) in the country.

The Temple University Libraries seek a Head of Digital Library Initiatives to lead a new service department in a library in the midst of dynamic growth, located in Philadelphia on the main campus of a vibrant, urban research university that is among the most diverse in the nation. For more information about Temple and Philadelphia, visit www.temple.edu/about/.

The Head of Digital Library Initiatives will aggressively expand the digital library program at Temple, providing vision and leadership in the creation and delivery of digital content. The incumbent will work closely and collaboratively with senior administrators, special collections, technical services, computing staff, and others to ensure fast-paced development of digital library initiatives that respond to the needs of Temple's

community and align with collections and preservation priorities. These include digitization of special collections and other library materials in text, image, and video formats; the development of digital repository systems to preserve and make accessible the intellectual output of Temple University; and the implementation of discovery tools related to these initiatives. In particular, the individual will:

- *hire additional information technologist staff;
- *supervise full-time staff, as well as student assistants;
- *plan, prioritize, and coordinate or manage digitization production;
- *investigate and establish appropriate standards (technical, metadata, etc.) and quality control procedures;
- *coordinate the library's Web services;
- *maintain awareness and develop in-depth knowledge of new technology, relevant national standards, and best practices, assessing and integrating these into library practices for best results as appropriate.

Compensation: Competitive salary and benefits package, including a relocation allowance. Compensation will be commensurate with qualifications and experience.

Qualifications:

Required: Master's degree in Library Science, Information Science, Computer Science/Systems Management, Public History, or other allied discipline. At least four years progressively responsible experience with the concepts and software/hardware applications used in organizing and presenting digital information. Demonstrated ability to plan, coordinate, and implement effective programs, complex projects, and services. Excellent organizational skills and demonstrated ability to handle complex analytical and detailed work. Excellent oral and written communication skills. Ability to work independently and collaboratively in a complex and rapidly changing environment.

Preferred: The ideal candidate will present a strong combination of demonstrated experience and knowledge in the following areas: metadata and associated functional standards, including XML/XSLT. Experience with developing interfaces for Web resources, including knowledge of database management principles and software. Familiarity with one or more major digital content management systems appropriate for institutional repositories. Knowledge of current digital library technologies, standards, and best practices. Experience with obtaining grant funding and managing grant-funded projects.

14. Project Manager, Digital Lab

Harvard University

Posted: 19/04/2010

The Harvard Law Library is seeking an energetic and creative person to serve as Project Manager in our newly created Digital Lab. The Digital Lab is the Library's focal point for a wide range of activities including digitizing materials from the Library's collection, preserving born digital materials acquired by the Library or produced by the Law School, curating and exhibiting digital collections, and developing internet tools and new applications to promote and enhance access to legal and other information.

Duties & Responsibilities

Reporting to the Associate Director for Collection Development and Digitization, the Project Manager, Digital Lab serves as chair of the Digital Stewardship team and chief curator for digital projects; coordinates the selection of materials for digitization projects; designs and coordinates production workflows for digitization and metadata application for both internal and external projects; serves as chief liaison to the Library's Historical and Special Collections unit to ensure proper care and curation of selected materials for digitization; advises on pre-digitization issues including arrangement, description, copyright assessment, and metadata strategies; oversees project timelines and budgets of all digitization projects; manages the operation of the Library's in-house digital production center; purchases, maintains and upgrades digitization hardware and software; oversees quality assurance of digital output; develops and implements policies and procedures for the Library's digitization activities; develops and/or coordinates usability studies related to digital collections; coordinates strategies for publicity and dissemination of digital collections; identifies digital storage needs and recommends storage medium; provides written progress reports on digitization projects; maintains documentation of training, policies, procedures and guidelines.

The Project Manager, Digital Lab, will stay current with emerging trends, technology, user needs and services. He or she will manage digital preservation projects including recommending development of an in-house infrastructure that provides the capability to identify, create, convert, and preserve digital content; developing the Library's digital preservation policy; working with the Harvard University Archives staff to coordinate the Law Library's role in the preservation of the Law School's born digital content; and serving as the primary coordinator for the Law Library's collaborative digital preservation projects with other libraries.

The Project Manager, Digital Lab will supervise a Digital Projects Assistant , a Web Development Librarian, and will coordinate the activities of the Lab's fellows. He or she will work with other members of the Digital Lab team on development of internet tools and new applications.

Basic Qualifications

- Master's degree in Library and Information Science, Information Systems or Information Technology
- A minimum of 3 years experience working in an academic or large digital production environment.

Additional Qualifications

- Experience with digital conversion for all formats including audio and visual.
- Knowledge of current digitization best practices in all formats.
- Experience applying MARC and Dublin Core Metadata Elements and technical metadata for supporting long term archiving.
- Knowledge of current and emerging metadata standards such as METS, MODS, etc.
- Understanding of copyright laws and rights management issues in a digital environment.

- Knowledge of how digital library collections are used in an academic setting.
- Familiarity with digital preservation theories, standards and best practices.
- Familiarity with HTML, CSS, and SQL.
- Proven leadership to include seasoning in technology related project management, consultative and negotiation skills, experience working with teams, motivating teams, understanding project team dynamics and using collaboration and management tools.
- Must have excellent verbal, interpersonal and written communication skills; strong attention to detail, focus on task completion all with a strong commitment to customer service.

15. Integrated Digital Services Librarian

**University of Baltimore,
Baltimore, Maryland**

Posted: 04/19/2010

Langsdale Library
University of Baltimore

Faculty position with benefits package

Review of applications will begin on 5/12/2010 and will continue until the position is filled.

Salary commensurate with qualifications and experience

NOTE: An employment offer is contingent upon university funding of the position.

The Integrated Digital Services Librarian will be responsible for Langsdale's integrated library system (ILS) and related services and will serve as the library webmaster. He or she will lead the collaborative design and development of the library's web-based services and technology planning, including the implementation of the next-generation ILS (a University System of Maryland consortial system). He/she will support technology applications in all library departments, including interlibrary loan, course reserves and digital collections. He/she will maintain an in-depth understanding of technological trends and developments affecting academic libraries through a commitment to ongoing professional development. He/she will work collaboratively and creatively with librarians from Langsdale and the UB Law Library, I staff, and the University Webmaster.

This is a 12-month, full-time faculty position, reporting to the Director of the Library.

Required Qualifications:

MLS from an ALA-accredited program or equivalent degree; demonstrated knowledge of current trends and issues in library technology; working knowledge of UNIX and Windows platforms and applications, and ability to troubleshoot hardware and software problems; experience with and knowledge of library web design standards, web graphics skills, HTML, XML, CSS, and scripting languages such as PHP and JavaScript. The successful candidate must be able to work both independently and collaboratively, to learn and apply new technology.

quickly, and have a working knowledge of metadata standards and best practices in digital library projects. He/she should have strong oral and written communication, analytical, organizational and project management skills.

Preferred Qualifications:

Experience with an ILS, preferably with Ex Libris' suite of products including Aleph, MetaLib and SFX.

16. Assistant Professor, OSU Library, Digital Library Services

**Oklahoma State University Library,
Stillwater, Oklahoma**

Posted: 04/20/10

BACKGROUND:

The Digital Library Services (DLS) Department facilitates access to electronic information, print materials, and library services to ensure that the information needs of OSU students, faculty, and staff are met, regardless of their location. This mission is accomplished through the use of state of the art technologies, library instruction, and document delivery services.

RESPONSIBILITIES:

The successful candidate will report to the Head, Digital Initiatives, and provide reference services and technical assistance to OSU students, faculty and staff through a wide variety of Web 2.0 technologies, including instant messaging services, chat and text, phone, e-mail and in-person; and coordinate the Library's e-Journals @ OSU, promote content acquisition across campus, represent the e-journal collection to groups across campus; manage and coordinate scanning, uploading, conversion, employing OCR and public presentation of open access journals.

He/she will manage the Library's site license for bibliographic manager software, coordinate marketing, promotion and distribution of bib manager software through CD's, or online download and provide onsite and remote training as requested. In addition, he/she will work directly with the Head, Digital Initiatives in building our digital repository, e-Archive and other OSU Library digital collections, as requested. He/she will maintain detailed department statistics electronically, and supervise DLS students' projects and assignments, monitor student timesheets and DLS student payroll.

QUALIFICATIONS:

Required ALA-accredited master's degree. Minimum 3 years professional library experience. Extensive experience using Office 2007, Acrobat Professional, DreamWeaver (or similar web editor), html, PhotoShop, Open Journal System (as developed at Simon Fraser University). Extensive experience using EndNote and Reference Manager; demonstrated experience creating customized connection files and filters; training new and intermediate users in a

classroom setting and one-on-one.

Previous supervisory experience. Demonstrated experience providing quality customer service to patrons with varied technological skills. Experience using a variety of web 2.0 technologies to delivery reference service and technical support, examples include chat, instant messaging, Vyew, dimdim, Jing, Ning, etc. Demonstrated flexibility in a highly dynamic library, ability to multi-task. Outstanding oral and written communications skills Desired: Experience using Apple hardware and software (OS X, Safari, Chrome, etc.). Knowledge of Desire2Learn, course management system. Experience using Joomla, content management system. Evident membership and contribution to professional library organizations.

17. Digital Collections Coordinator

**University of Texas at Austin,
Austin, Texas**

Posted: 04/20/2010

The University of Texas at Austin is a world-class institution whose undergraduate and graduate academic programs rank among the best in the country. The University's seventeen libraries constitute the nation's sixth largest academic library, containing over 8 million volumes. Austin, with a robust economy and many job opportunities, offers natural beauty, abundant outdoor and cultural activities.

One of the world's finest cultural archives, the Harry Ransom Humanities Research Center is an independent academic special collections library and museum with 37 million literary manuscripts, one million rare books, five million photographs, and 100,000 works of art.

The Ransom Center seeks a Digital Collections Coordinator to oversee planning relating to the strategic management of all digital assets and to enhance and manage the digital preservation program to ensure their long-term viability. The position has been initially funded for five years.

Position Description: The Digital Collections Coordinator will report to the Associate Director & Librarian and will work closely with Technology & Digital Services staff, conservators, digital archivists, administrative staff, and other staff as appropriate:

- * Work with administrative staff to establish goals and priorities, identify objectives, and coordinate and monitor projects related to these assets;
- * Develop and oversee maintenance of a digital assets management system (DAMS) as an integral part of the research, teaching, and learning mission of the Center;
- * Advise administrators and other curators on acquisitions of archival collections including born-digital materials in all formats; identify appropriate materials to strengthen digital collections;
- * Work with archivists to develop best practices to access, preserve, describe, and interpret digital materials;
- * Work with staff library-wide to continue development of best practices for digitization, metadata creation, online access, digital repositories, and digital preservation;
- * Participate in the development of online exhibitions and digital collections;
- * Identify grant opportunities and work with development staff to create proposals in support of digital collections and continuing funding for the position;

* Attend conferences and meetings devoted to emerging technologies; work with counterparts at the UT Libraries and other campus agencies and with library, archive and museum managers worldwide in developing best practices for the preservation and management of digital collections.

Required Qualifications: Master's degree in a subject area (humanities/arts preferred) or library/information science. Substantial work experience involving digital library materials and repositories. Demonstrated familiarity with current best practices in digitization, metadata, storage, and management of digital assets. Familiarity with standard library software, networks, and both Windows and Macintosh operating systems. Excellent written and verbal communication skills. Demonstrated ability to initiate, facilitate and conclude projects with efficiency and effectiveness.

Preferred Qualifications: Second advanced degree. Experience in special collections or archives or familiarity with special collections materials. Familiarity with programming development, database management, and network administration. Publications. Experience working with donors and grant-writing.

18. Metadata and Digitization Librarian

Illinois Institute of Technology, Chicago, IL

Posted: 30/04/2010

GENERAL DESCRIPTION

The Metadata and Digitization Librarian provides leadership on all issues related to description and discovery of digital collections and assets including establishing metadata policies, procedures, and best practices to facilitate discovery and improve access to these resources.

KEY RESPONSIBILITIES:

Establishes policies, procedures, workflow, and best practices for the library in the application of metadata to digital content in order to facilitate increased accessibility by the IIT community. Provides original cataloging of digital materials for inclusion in the integrated library system and other content management systems using current and emerging metadata standards.

Manages IIT's institutional repository (IR), Share, including establishing policies, procedures, and workflow for the submission of materials for inclusion in the IR and application of descriptive and administrative metadata to these materials.

Instructs and trains staff and student assistants in the application of metadata to digital content. Maintain documentation on training, policies, procedures, guidelines, and established workflow for the application of metadata to multiple digital resources and digitization projects. Provides expertise in creating, managing, and preserving local digital collections including providing overall quality control in the application of metadata.

Assists with the selection of materials for digitization and the implementation of new digital collections. Seeks additional sources of external funding in support of digital collection development and participate in the grant proposal writing process.

Collaborates with Library Technology on the production of administrative and technical metadata, storage of digital objects, and the creation of standards for the archiving of digital content.

Additional responsibilities as assigned.

QUALIFICATIONS

Education & Experience: Master's degree from an ALA-accredited institution and professional experience in an academic or research library. Minimum of 2 years professional library experience applying metadata. Minimum of 2 years MARC-based cataloging experience.

Experience in project management and cross unit collaboration.

Preferred Skills: Professional understanding and knowledge of non-MARC metadata schemes, standards, best practices and their applications, such as Dublin Core, EAD, VRA Core, MODS, and METS.

Knowledge of established thesauri and vocabularies used in library digital collections.

Professional understanding and knowledge of cataloging procedures and principles, including AACR2R, LC Classification, LCSH, and MARC. In depth knowledge of bibliographic utilities and tools including OCLC input standards and guidelines. Familiarity with RDA and FRBR.

Working knowledge of institutional repositories, standards, and applicable intellectual property policies.

Ability to manage a complex workload with minimal supervision, prioritize tasks, and meet deadlines. Ability to work independently as well as in a team environment.

Effective oral and written communication skills.

19. Head, Digital User Experience Department

**Indiana University,
Bloomington, Indiana**

Posted: 05/11/10

RESPONSIBILITIES: Head of Digital User Experience Department is charged with development of holistic vision for user's experience and implementation of comprehensive digital strategy and operational plans for IU Libraries Bloomington web presence. Responsibilities: effective integration of discovery tools for electronic resources; development of integrated resources in a variety of environments based on principles of user-centered design; oversight of web publishing infrastructure and ensuring compliance with University and industry standards for security, privacy, and accessibility; implementation of transformative technologies (such as Web 2.0); ongoing user testing and redesign; and other assessments of the web-based services.

QUALIFICATIONS: Required: ALA-accredited MLS or Master's degree in Information Architecture, Science, or Design; understanding of information seeking behaviors in academic research environment; understanding of library instruction, outreach, or reference services; demonstrated success as effective team member and individual contributor in multi-project and multi-unit environments; strong oral and written communication and interpersonal skills,

with specific strengths in communicating range of project, functional and technical information to internal partners, external partners, end-users; knowledge and experience with web design, information architecture, systems analysis, working knowledge of web content management systems and relational databases; familiarity with relevant standards and technologies, such as PHP, XML, XHTML, CSS, SQL, XSLT, JavaScript; and 3-5 years experience in academic library; able to meet requirements of tenure-track librarian position. Preferred: Second degree in Information Science, Graphic Design, Human-Computer Interaction, or related field; familiarity with open source programming; experience with implementation of APIs/web services, including customization of licensed databases and information products; familiarity with collection development in academic library; understanding of metadata standards; experience with user-centered web design. SALARY AND BENEFITS: Competitive and commensurate with experience and education. Benefits: university healthcare plan, university-funded base retirement plan, 100% university paid group life insurance plan, generous paid time off plan. Tenure-track academic appointment includes eligibility for sabbatical leaves.

20. Digital Content/Reference Services Librarian

Cleveland-Marshall College of Law Library, Cleveland, Ohio

Posted: 13/05/2010

Job Description:

Provides research, reference and instructional services to a diverse group of patrons and staff. Organizes and provides access to materials in a variety of formats, with emphasis on electronic and visual resources. Develops, manages and organizes Law Library digital content programs, including special collections projects, College of Law publications archive, and College of Law Institutional Scholarship Repository. Interacts professionally with all internal and external customers using strong interpersonal skills.

Requirements:

Minimum qualifications: Master's degree in Library Science (MLS) from an ALA accredited institution and a Juris Doctor degree from an ABA accredited school. Experience with creation or management of digital objects in various text, image, sound and video formats. Knowledge of digital asset management systems such as DSpace, CONTENTdm, etc. Knowledge of integrated library system functionality pertaining to cataloging. Excellent interpersonal, written and oral communication skills and the ability to work effectively with a wide range of constituencies in a diverse community.

Preferred qualifications: Knowledge of how digital library collections and electronic objects are used in an academic setting. Experience with or knowledge of one or more of the following metadata standards: Dublin Core, METS/MODS, OpenURL, OAI-PMH, XML, or others. Relevant experience working in a law library.

21. Music & Digital Services Librarian, IT/OLL

Marshall University, Huntington, West Virginia (WV)

Posted: 13/05/2010

Qualifications:

- ALA-accredited MLS degree or equivalent;
- Bachelor's degree with a major in music or equivalent or 2 years of experience in an academic or research library with strong academic background in music.
- Excellent oral and written communication skills;
- Demonstrated ability to prioritize, plan, coordinate and implement multiple projects, ability to write and carry-out policies and procedures
- Knowledge of cataloging rules, standards, and controlled vocabularies;
- Awareness of current issues and trends in digital services;
- Demonstrated ability to work quickly and accurately in a service and production-oriented environment and adapt to a fast paced rapidly changing environment;
- Demonstrated ability to work independently, as well as collaboratively with diverse constituencies;
- Demonstrated exceptional workplace behaviors in the execution of this specific position responsibilities.
- These behaviors are customer focus, collaboration, creative problem solving, continuous learning and a commitment to diversity.

Preferred:

- Second master's degree in Music or related field;
- Five or more years of experience working in an academic or research library;
- Prior experience working on music cataloging or in a music library.

Duties:

- Perform original and copy cataloging of scores, recordings and other music resources with related authority control.
- Work closely with Catalog and Digital Services Librarian to develop or revise policy and procedure for cataloging and quality control of the libraries OPAC system;
- Work with the Technical Services Team Leader/Collection Development Librarian to select all print, digital, and media resources to support the curriculum and research needs of Marshall Music Department;
- Under the direction of the University Librarian to plan, implement, integrate, and maintain digital service and systems;
- As with all librarian positions at Marshall University, this position will participate in the embedded librarian program and will offer library instruction as part of the libraries' information literacy program;
- Participate in library, university, and professional activities as appropriate
- Perform other tasks and completing special projects as assigned.

Appendix 3: ALA's Core Competences of Librarianship

Final version

Approved by the ALA Executive Board, October 25th 2008

Approved and adopted as policy by the ALA Council, January 27th 2009

This document defines the basic knowledge to be possessed by all persons graduating from an ALA-accredited master's program in library and information studies. Librarians working in school, academic, public, special, and governmental libraries, and in other contexts will need to possess specialized knowledge beyond that specified here.

CONTENTS

- 1. Foundations of the Profession**
- 2. Information Resources**
- 3. Organization of Recorded Knowledge and Information**
- 4. Technological Knowledge and Skills**
- 5. Reference and User Services**
- 6. Research**
- 7. Continuing Education and Lifelong Learning**
- 8. Administration and Management**

A person graduating from an ALA-accredited master's program in library and information studies should know and, where appropriate, be able to employ:

1. Foundations of the Profession

- 1A. The ethics, values, and foundational principles of the library and information profession.
- 1B. The role of library and information professionals in the promotion of democratic principles and intellectual freedom (including freedom of expression, thought, and conscience).
- 1C. The history of libraries and librarianship.
- 1D. The history of human communication and its impact on libraries.
- 1E. Current types of library (school, public, academic, special, etc.) and closely related information agencies.
- 1F. National and international social, public, information, economic, and cultural policies and trends of significance to the library and information profession.
- 1G. The legal framework within which libraries and information agencies operate. That framework includes laws relating to copyright, privacy, freedom of expression, equal rights (e.g., the Americans with Disabilities Act), and intellectual property.
- 1H. The importance of effective advocacy for libraries, librarians, other library workers, and library services.
- 1I. The techniques used to analyze complex problems and create appropriate solutions.
- 1J. Effective communication techniques (verbal and written).
- 1K. Certification and/or licensure requirements of specialized areas of the profession.

2. Information Resources

- 2A. Concepts and issues related to the lifecycle of recorded knowledge and information, from creation through various stages of use to disposition.
- 2B. Concepts, issues, and methods related to the acquisition and disposition of resources, including evaluation, selection, purchasing, processing, storing, and de-selection.
- 2C. Concepts, issues, and methods related to the management of various collections.
- 2D. Concepts, issues, and methods related to the maintenance of collections, including preservation and conservation.

3. Organization of Recorded Knowledge and Information

- 3A. The principles involved in the organization and representation of recorded knowledge and information.
- 3B. The developmental, descriptive, and evaluative skills needed to organize recorded knowledge and information resources.
- 3C. The systems of cataloging, metadata, indexing, and classification standards and methods used to organize recorded knowledge and information.

4. Technological Knowledge and Skills

- 4A. Information, communication, assistive, and related technologies as they affect the resources, service delivery, and uses of libraries and other information agencies.
- 4B. The application of information, communication, assistive, and related technology and tools consistent with professional ethics and prevailing service norms and applications.
- 4C. The methods of assessing and evaluating the specifications, efficacy, and cost efficiency of technology-based products and services.
- 4D. The principles and techniques necessary to identify and analyze emerging technologies and innovations in order to recognize and implement relevant technological improvements.

5. Reference and User Services

- 5A. The concepts, principles, and techniques of reference and user services that provide access to relevant and accurate recorded knowledge and information to individuals of all ages and groups.
- 5B. Techniques used to retrieve, evaluate, and synthesize information from diverse sources for use by individuals of all ages and groups.
- 5C. The methods used to interact successfully with individuals of all ages and groups to provide consultation, mediation, and guidance in their use of recorded knowledge and information.
- 5D. Information literacy/information competence techniques and methods, numerical literacy, and statistical literacy.
- 5E. The principles and methods of advocacy used to reach specific audiences to promote and explain concepts and services.

5F. The principles of assessment and response to diversity in user needs, user communities, and user preferences.

5G. The principles and methods used to assess the impact of current and emerging situations or circumstances on the design and implementation of appropriate services or resource development.

6. Research

6A. The fundamentals of quantitative and qualitative research methods.

6B. The central research findings and research literature of the field.

6C. The principles and methods used to assess the actual and potential value of new research.

7. Continuing Education and Lifelong Learning

7A. The necessity of continuing professional development of practitioners in libraries and other information agencies.

7B. The role of the library in the lifelong learning of patrons, including an understanding of lifelong learning in the provision of quality service and the use of lifelong learning in the promotion of library services.

7C. Learning theories, instructional methods, and achievement measures; and their application in libraries and other information agencies.

7D. The principles related to the teaching and learning of concepts, processes and skills used in seeking, evaluating, and using recorded knowledge and information.

8. Administration and Management

8A. The principles of planning and budgeting in libraries and other information agencies.

8B. The principles of effective personnel practices and human resource development.

8C. The concepts behind, and methods for, assessment and evaluation of library services and their outcomes.

8D. The concepts behind, and methods for, developing partnerships, collaborations, networks, and other structures with all stakeholders and within communities served.

8E. The concepts behind, issues relating to, and methods for, principled, transformational leadership.